THE IRON TRADE REVIEW

VOLUME XXXVI CLEVELAND, OHIO, NOVEMBER 26, 1903 NUMBER 48

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The chief feature of the iron market in the past week has been increased activity in Southern pig iron at the lowest prices named for such iron in the present movement. On the basis of $9 a ton, Birmingham, for No. 2, 15,000 tons was taken by one pipe interest and inquiries for a good aggregate have been up in the week, while the total of business closed is the largest for one week in a long time. The point seems to have been reached at which bookings are in excess of current make, and firmer resistance is made to the effort to depress prices. Having had the pig iron market largely to themselves of late Southern producers have done enough business to make them less aggressive, and $9.25 is today the general minimum. A 5,000-ton lot was bought by a selling firm at $9.25, Birmingham. Accumulated stocks are the chief bar to a firmer market. The effort to move 50,000 tons from the Birmingham district abroad, which failed because a $2 through freight rate could not be secured is not likely to be renewed. The warrant yard appears again as a factor in the South after many months of disuse, but no large amount of iron has as yet been disposed of in this way. As indicating the better buying in November one Southern producer reports sales of 40,000 tons in the month. Northern furnaces have not attempted to meet the delivered prices on Southern iron, proceeding on the belief that as the Southern product is taken up at low figures prices will grow firmer, and preferring meanwhile to be satisfied with the business from foundries that must have a certain percentage of Northern grades. There has been some selling for 1904 delivery, but furnaces as a rule do not want contract business at present figures. Eastern furnaces have very generally made wage reductions, but in the Central West, where output is being sharply cut down, the readjustment is still postponed. Southern forge iron has sold at $12.10, Pittsburg, as against $12.75 to $13 for Northern. Connellsville coke producers are still working on the proposal for an agreement on prices, and the establishment of a central selling agency, but at this writing there has been no report from the committee handling the matter. Furnace coke has sold at $1.60 to $1.75 at the ovens and foundry coke at $2.25 to $2.40. Idle Connellsville ovens number 8,000. All finished material lines show the same hesitation that has been apparent for weeks, accented by the quietness that comes toward the close of the year. The steel billet market shows so little activity as to furnish little temptation to shade recently established prices, and exports of sheet bars and billets, of which a good deal begins to be heard from British markets, are an increasing factor at Bessemer and open-hearth works. A meeting of the billet manufacturers in December will consider the basis on which 1904 business will be taken. It does not appear that those finished lines in which price reductions have been marked have been greatly stimulated as yet, and plate and structural mills may not for a time miss any business by reason of the maintenance of prices. There is a feeling that if general wage reductions are made at steel works at the opening of the new year, further readjustments in finished materials will accompany them. The railroads have met the steel companies half way in the matter of lower freights to the seaboard on steel exports, and at two-thirds of the rate heretofore prevailing a considerable increase in the outward movement may be expected.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Nov. 25.

The iron and steel trade continues quiet in both raw and finished lines, and the business that is being placed in this district is to cover immediate requirements only. Despite recent reductions, consumers are not interested in buying for future delivery, while on the other hand, blast furnace operators throughout this territory will not consider any business for delivery after the first of the year at present prices. The blowing out of more than half of the furnaces in the Central West is not only keeping down stocks, but has reduced the offerings of iron at low prices to a minimum, while the policy of consumers to purchase only for immediate requirements points to a healthy buying movement in the near future, and one that will not be set back by offerings of accumulated stocks at extremely low prices. Foundries and other consumers of pig iron, as well as consumers of finished products, are carrying practically no stocks.

The tremendous falling off in coke consumption, due to the banking and blowing out of furnaces and the limited consumption on the part of foundries, has demoralized the coke trade to a great extent, and while producers are quoting $2.25 to jobbers only on foundry, with a 15-cent advance to consumers, a fair sized order can be readily placed by a consumer at the low figure. Furnace coke is quoted at $1.60 to $1.75, but large consuming interests are not yet closing for 1904 requirements, believing that still lower prices may be named. The committee appointed by the coke producers for the purpose of formulating a plan for maintaining prices has not yet adopted any policy for presentation to the producers. The committee met yesterday afternoon and another meeitng is being held this afternoon, at which a plan will be adopted for presentation to the producers at an early date. A central selling agency is favored by several members of the committee, but it is not yet known whether this plan will be adopted for recommendation.

No concessions from recent established prices on Bessemer and open-hearth billets can be discovered, and it doubtful if the present volume of business will warrant any. In finished lines 2.35c is being quoted on No. 28 gauge black sheets and as low as 80 off has been quoted on galvanized in large lots. No further reductions are being made on wire nails and wire products, nor are the cut nail manufacturers making concessions. In the pipe trade some of the independent mills are cutting the quotations of the National Tube Co. about 5 percent on all lap weld sizes. A meeting of the independent pipe interests was held here yesterday, but no action was taken owing to the small number in attendance.

Pig Iron.—Pig iron transactions continue to be almost entirely limited to carload and 50 and 100-ton orders, the low prices of the Southern furnaces evidently being no inducement for local foundries or rolling mills to buy for even 30-day requirements. Pig iron stocks at nearly all the local foundries and rolling mills are nil, while the furnace shutdowns are preventing the accumulation of stocks. Northern No. 2 continues to be sold at prices

ranging from $14.25 to $14.75 Pittsburg, and no quotations are being made below the low price named. Small lots of Southern No. 2 have sold here at $13.35, netting the furnaces $9 Birmingham. On forge iron $7.75 Birmingham or $12.10 Pittsburg is the lowest price that is being named, while Northern forge is held firmly at $12.75 to $13. This week the Clairton Steel Co. blew in stack No. 1, which has been out for about a month, and the furnaces of the Duquesne plant of the Carnegie Steel Co. are again on in full. The idle stacks of the Ohio plant of the Carnegie Steel Co., Youngstown, O., will be blown in next Tuesday. The Mabel stack at Sharpsville, Pa., is again in operation, while the Brier Hill furnace at Youngstown is out. On Bessemer iron, from $14 to $14.25 Valley is being quoted, and a small lot was sold in the week at $15 Pittsburg. We revise quotations as follows:

Bessemer, Valley	$14 00 to 14 25
Bessemer, Pittsburg	14 85 to 15 10
No. 1 Foundry	14 75 to 15 00
No. 2 Foundry	14 25 to 14 50
Gray Forge, Pittsburg	12 75 to 13 00
Chilled Basic, Valley	14 00 to 14 25
Chilled Basic, Pittsburg	14 85 to 15 10

Steel.—There is little buying of steel, and pool quotations are being firmly maintained. This week the Duquesne plant of the Carnegie Steel Co. went on in full, while the Bessemer plant of the Republic Iron & Steel Co., Youngstown, O., was shut down last week. Agreement quotations are as follows: Bessemer and open-hearth billets, 4 x 4 inches, and slabs, up to and including 0.25 carbon, $23, Pittsburg, Wheeling, Valley, Johnstown, Ashland, Ky., Ironton, O., and Lorain, O.; 0.26 and including 0.60 carbon $1 advance, and 0.61 to 1.00 carbon, $2 advance. Billets smaller than 3⅞ inches and sheet and tin bars are $1 per ton extra. Bessemer and open-hearth rods are quoted at $31 Pittsburg, but there is little buying, and no doubt a large order could be placed at $30.50.

Ferro-Manganese.—There is little buying of ferro, and both foreign and domestic continue to be held at $48 per ton, delivered at buyer's mill, east of the Mississippi river in carload lots. Fifty-ton lots can be placed at $47.

Spelter.—The spelter market continues to decline and prime Western grades are now held at 4.95c to 5c Pittsburg.

Muck Bar.—There is practically no business being placed, and prime muck is held nominally at $27.

Skelp.—There is little demand for either iron or steel skelp. Both grooved and sheared iron skelp is held at 1.40c to 1.45c, while steel is quoted at 1.35c to 1.40c.

Rails and Track Material.—Little new business is being placed in either standard or light rails. It is stated that the Canadian Pacific order has not yet been placed. We make the following quotations: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots, $32; 16 and 20 pounds, $28 to $29; 25 to 40 pounds, $26.50 to $27. Track material: Spikes, 1.95c to 2c; track bolts, square nuts, 2.25c to 2.30c; hexagon nuts, 2.40c to 2.45c; fish plates, 1.60c on orders accompanying large rail contracts, otherwise 1.80c to 1.85c is asked.

Plates.—Contracts for 6,000 steel cars are now pending and will probably be placed before the first of the year. As in other lines, the amount of new plate business placed is very light. Agreement quotations are as follows: Tank plates, ¼-inch thick and up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. B. M. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c, and it ranges in price to 3c. Plates more than 100 inches, 5c extra 100 pounds. Plate 3-16-inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra. These quotations are based on carload lots, with 5c extra a hundred pounds for less than carload lots. Terms, net cash, in 30 days.

Bars.—Consumers of steel bars, while buying somewhat more heavily than before the recent decline, are not covering future requirements, but orders are more numerous than for some time. Iron bars continue to be quoted at 1.30c Youngstown. We make the following quotations: Bessemer steel bars, 1.30c; open-hearth, 1.40c; plow beams and cultivator beams, 1.30c, net; channels, angles, zees and tees, Bessemer, under 3 inches, 1.40c; common bar iron, 1.35c to 1.40c Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds of a size and not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance. Hoops are quoted at 1.65c, full extras, in 250-tons lots and over, and 1.75c in less than 250-ton lots. Bands are quoted at 1.30c and take the bar extras.

Structural Material.—New business continues light, and will probably continue so until the first of the year. Quotations remain unchanged as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles, from 3 to 16 inches, 1.60c; universal mill plates, 1.60c.

Sheets.—As low as 2.35c is now being quoted on No. 28 gauge, black sheets in large lots. On galvanized as low as 80 off has been done on a large order. Roofing plates are off about 5 cents a square. We revise quotations on both black and galvanized sheets as follows: No. 28, 2.35c to 2.40c; No. 27, 2.25c to 2.30c; No. 26, 2.15c to 2.20c; Nos. 22 and 24, 2.05c to 2.10c; Nos. 18 and 20, 2c to 2.05c; Nos. 14 and 16, 1.85c to 1.90c; Nos. 10 and 12, 1.75c to 1.80c. Galvanized, Nos. 10 to 17, 2.40c to 2.45c; Nos. 17 to 22, 2.60c to 2.65c; Nos. 22 to 25, 2.80c to 2.85c; Nos. 25 and 26, 3c to 3.05c; No. 27, 3.20c to 3.25c; No. 28, 3.40c to 3.45c; No. 29, 3.80c to 3.85c; No. 30, 4.20c to 4.25c.

Wire and Wire Nails.—No further concessions are being offered on wire nails or wire products and recent quotations on cut nails are being well maintained. The volume of business in wire nails is good and jobbers report a good demand. We quote: Wire nails, carload lots, to jobbers, f. o. b. cars Pittsburg, $1.90 to $1.95; plain wire, carload lots, $1.80 to $1.85; barb wire, carload lots, $2.20 to $2.25; staples, carload lots, $2.10 to $2.15. Galvanizing, 30 cents extra. Carload lots to retailers are held at 5 cents advance in all lines, and on less than carload lots a further advance of 10 cents is charged. Steel cut nails are quoted as follows: Carload lots, $1.90, and less than carload lots, $1.95, f. o. b. Pittsburg, plus freight to point of destination. Iron cut nails are $2 in carload lots and $2.05 in less than carload lots. Terms, 60 days, less 2 percent off in 10 days.

Merchant Steel.—Demand generally is limited for nearly all products, but the number of orders, while calling for a small tonnage is exceedingly large. We make the following quotations: Turned, cold rolled and ground shafting, 52 off in carload lots and 47 percent off in less than carload lots. Tire steel, 1.70c to 1.80c; spring steel, 2.15c to 2.20c; toe calk, 2.15c to 2.20c. Tool steel is quoted 7 cents and upwards, according to the grade.

Coke.—At the meeting of the committee appointed by the coke producers that is being held this afternoon, some plan will be adopted for giving the present sagging market stability. Connellsville foundry coke is quoted at $2.25 to $2.40 and furnace at $1.60 to $1.75. For the week ending Saturday, Nov. 14, the production of the upper Connellsville region amounted to 133,290 tons and that of the lower region to 44,233 tons. About 8,000 ovens are idle.

Pipes and Tubes.—At a meeting of the independent pipe producers held here today no action was taken with regard to ruling quotations, owing to the small attendance. We quote as follows in carload lots to consumers, f. o. b. Pittsburg, plus freight according to Tube Rate Book to destination:

	MERCHANT PIPE. Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Wrought Iron Pipe. Black. Percent.	Wrought Iron Pipe. Galv. Percent.
⅛, ¼ and ⅜ inch	68	58	65	55
½ inch	70	60	67	57
¾ to 6 inch	75	65	72	62
7 to 12 inch	69	59	66	56
Plugged and Reamed				
1 to 4 inch	73	63	70	60
Extra Strong Plain End				
⅛ to 8 inch	67	57	63	53
Threads only	66	56	62	52
Threads and Couplings	65	55	61	51
Double Extra Strong Plain End				
⅛ to 8 inch	59	49	55	45
Threads only	58	48	54	44
Threads and Couplings	57	47	53	43

NOTE.—Orders for less than carload will be charged at 12½ percent

advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 percent net for 6 feet and longer, and 15 percent net for 3 to 6 feet.

BOILER TUBES.

Steel.

	Percent.
1 to 1½ inches	48
2¼ to 5 inches	62½
1¾ to 2¼ and 6 to 13 inches	52½

Iron.

	Percent.
1 to 1½ inches	36½
2¼ to 5 inches	45½
1¾ to 2¼ and 6 to 13 inches	35½

CASING.

	S. and S. Percent.
2 to 3 inches	58
3¼ to 4 inches	60
4¼ to 12½ inches	63

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1115 MONADNOCK BLOCK, Nov. 24.

Emphatic denial is made by officials of the Republic Iron & Steel Co. of the report widely published that negotiations are pending between it and the United States Steel Corporation for the sale of its plants to the latter; also of the statement that it contemplates taking over the upper and lower valley mills of the American Steel Hoop Co., and of the rumor that a deal is pending for the absorption of the Youngstown Iron Sheet & Tube Co. The company states that these reports are made out of whole cloth and that no negotiations are pending that will in any wise affect its present status.

Finished iron and steel and pig iron are without material change, demand being at a minimum and prices softening. Southern furnaces are still making a strenuous effort to hold this market on the basis of $9.50 Birmingham, though it is apparent that they have failed in this effort. There has been a heavy inquiry within the last ten days, one leading interest has been quoting $9.25 for several days, and at least one sale was made last week at $9, and a number of buyers are waiting. This is essentially a drifting market, buyers waiting for the bottom and sellers disinclined to go lower, and both sides resting on their oars to see what the future will bring. Foundrymen have as good a reason for not wanting to buy as furnaces may have for not selling. Their order books are slim and they are confronted with a falling market on all kinds of machinery castings and iron work, and having danced a year ago to the tune set by the producers, are disposed now to do a little of the playing themselves.

Iron bars are weaker and are now quoted at 1.35c Chicago. Sheets have also been reduced to conform with the lower prices of sheet bars and billets, and in cases where independent manufacturers are cutting prices on barbed wire and wire nails, the leading producer is meeting those prices. There is a good demand for boiler tubes and sheets, and structural steel has also taken on increased activity during the week. A good tonnage has been booked in rails, and plates have improved slightly. Scrap is weak, with little demand, and the trade in foundry coke is like that in pig iron.

Pig Iron.—By gradual stages, and with furnaces contesting every step, the pig iron market in Chicago is being forced to the basis which foundrymen have set as the one on which they will buy. The struggle has been a long one and as producers have approached the coast line, concessions have been made only under stress of competition and accumulated stocks. At first prices were cut $2 a ton and more; now it has got down to a matter of cents, furnacemen contesting every cent of loss conditions have now thrust upon them. But foundrymen have set $9 Birmingham as the figure at which they are willing to consider contracts, and it becomes increasingly evident that this is the basis on which business will be done freely. Some producers are known to have made it; others ask $9.25, which is now common, while a larger number are quoting $9.50, though transacting little business. The condition of this market is aptly stated in the remark of one seller, that if he had authority to sell at $9, he could immediately close contracts for 10,000 tons. It is an ebbing market. During the week a heavy inquiry for iron set in, one seller estimating it at 30,000 tons. While some of this may naturally be regarded in the light of "feelers," the bulk of it is bona fide, and includes one order for 6,000 tons of basic iron, another for 5,000 tons of Northern and Southern irons equally divided, with several lots ranging from 1,000 to 2,000 tons each. Sellers regard it more than likely that the bulk of this business will be held up until the market assumes more definite shape, and believe buyers will content themselves in the meantime with purchases of small lots. Malleable iron has been in request during the week, the tonnage closed approximating 5,000 tons. Northern coke irons are nominally unchanged though weaker, and a buyer could undoubtedly shade the prices quoted below on an attractive order. We have revised some of our prices, and quote as follows:

Lake Superior Charcoal	$16 50 to 17 50
Northern Coke Foundry No. 1	15 00 to 15 50
Northern Coke Foundry No. 2	14 50 to 15 00
Northern Coke Foundry No. 3	14 00 to 14 50
Northern Scotch Foundry No. 1	15 50 to 16 00
Ohio Strong Softeners No. 1	16 80 to 17 30
Ohio Strong Softeners No. 2	15 80 to 16 30
Southern Coke Foundry No. 1	13 85 to 13 85
Southern Coke Foundry No. 2	13 85 to 13 85
Southern Coke Foundry No. 3	13 85 to 13 85
Southern Coke Foundry No. 4	11 80 to 12 35
Southern Gray Forge	11 85 to 11 80
Southern Mottled	11 30 to 11 85
Southern Silveries (4% to 6 % Silicon)	15 85 to 16 35
Jackson Co. Silveries (6% to 10% Silicon)	18 30 to 20 30
Alabama and Georgia Car Wheel	21 85
Malleable Bessemer	14 75 to 15 25
Basic Iron	13 35 to 14 35

Bars.—While specifications on contracts for steel bars show an improvement, there is no change to be noted in the volume of new business. It continues quiet. It is probably true that the recent cut came too late in the year to be of any practical service either to the producer or consumer, and not until the holiday season is over and manufacturers have completed their inventory will there be any marked improvement in the demand for soft steel bars. There is little call for iron and prices are weaker, one producer quoting as low as 1.35c. This is being made only on good sized lots, however; on smaller quantities 1.40c to 1.45c is asked. Store trade is fairly brisk. We quote mill shipments, carload lots, Chicago delivery—iron, 1.35c to 1.45c; soft Bessemer steel, 1.46½c; angles, less than 3 x 3, 1.56½c, base half extras; hoops, 1.91½c, (in lots of 250 tons and greater, 1.81½c rates, full extras). Jobbers' quotations on carloads and less: Iron, 1.65c to 1.75c; steel, 1.60 to 1.70c; small angles, channels and tees, less than 3 x 3, 1.70c to 1.80c; hoops, 2.10c rates, full extras.

Sheets.—The leading interest has reduced its prices to conform with the lower prices on sheet bars and billets, which has been followed by reductions on warehouse stocks. This has stimulated a good demand, and transactions during the week have been active. We quote mill shipments, carload lots, Chicago delivery, No. 27 gauge, black, 2.51½c to 2.56½c; No. 28, 2.61½c to 2.66½c; galvanized, No. 27 gauge, 3.41½c to 3.46½c; No. 28, 3.61½c to 3.66½c. From warehouse stocks, we quote Nos. 22 and 24, 2.70c to 2.80c; No. 26, 2.75c to 2.85c; No. 27, 2.85c to 2.95c; No. 28, 2.95c to 3.05c. Galvanized from store, 75 and 5 percent discount.

Plates.—The tonnage closed during the week shows a slight improvement over several preceding weeks, but is still far from satisfactory. There is no change in prices. We quote mill shipments, Chicago delivery: Tank steel, ¼-inch and heavier, 1.75c; flange steel, 1.85c. From store, we quote small lots: Tank steel, ¼-inch and heavier, 1.90c to 2c; 5/16, 2c to 2.10c; No. 8, 2.10c to 2.20c; No. 10, 2.15c to 2.25c; flange steel, 2.25c, all f.o.b. warehouse.

Structural Steel.—Owing to the adoption of the Pittsburg base with the addition of the freight rate to point of delivery, mentioned last week as the selling price in this territory, an increased demand has been felt from the points favorably affected by this change. Otherwise, there is no change either in prices or conditions. We quote mill shipments, Chicago delivery, as follows: Beams and channels, 16 inches and under, 1.76½; 18 inches and over, 1.86½c; universal plates, 1.75c; angles, 3 x 3 and larger,

1.76½c; tees, 3 x 3 and larger, 1.81½c; zees, 1.76½c. On lots from store, we quote beams, channels and angles, 3 x 3 and larger, 1.90c rate; 18, 20 and 24-inch, 10 cents extra; tees, 1.95c rates.

Merchant Steel.—Specifications continue to be received by mills in good volume and some new business has been closed. We quote mill prices, carload lots, Chicago delivery: Spring steel, 2c; sleigh shoe, flat sizes, 1.60c; concave and convex, 1.75c; cutter shoe, 2.20c to 2.30c; machinery steel, 2.15c to 2.25c base; plow steel, 2.50c and upwards, according to quality; toe calk, 2.05c. Ordinary grades of tool steel, 6c to 8c; specials, 12c and upwards. Cold rolled shafting in carload lots, 52, and in less than carload lots lots, 47 percent discount from list.

Merchant Pipe.—Business has been good during the week, and specifications show no diminution. Independent concerns are reported to be shading the prices of the leading producer. We quote carload lots to consumers, mill shipments, random lengths, f.o.b. Chicago, as follows:

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ to ⅜ inch inclusive.....	66.35	56.35	63.35	53.35
½ inch	68.35	58.35	65.35	55.35
¾ to 6 inches	73.35	63.35	70.35	60.35
7 to 12 inches inclusive.....	67.35	57.35	64.35	54.35

Less than carload lots, 12½ percent advance over above prices.

Boiler Tubes.—There is no change to be noted in the general situation, the buying continuing of good volume. Prices are without change. We quote carload lots from mill, Chicago delivery, as follows:

	L. W. Steel. Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ in.	40.85	37.35	53.35
1¾ to 2½ in.	53.85	36.35	40.35
2¾ to 5 in.	59.35	49.35	Up to 4 inches.
6 to 13 in.	53.85	36.35	48.35

For car lots or less, direct from warehouse stock:

	L. W. Steel. Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ in.	40	35	37.50
1¾ to 2½ in.	50	32.50	35
2¾ to 5 in.	57.50	42.50	Up to 4 inches.
6 to 13 in.	50	32.50	45

Cast Iron Pipe.—Business has fallen off owing to the recent cold snap which has prevented the laying of pipe. Prices are weaker, and we quote carload lots, f.o.b. Chicago, 4-inch pipe, $28.50; 6-inch and upwards, $27.50; gas pipe $1 a ton higher.

Rails and Track Supplies.—There has been a good inquiry for both heavy and light rails, and some thousands of tons have been booked for next year's delivery. The rumors that prices on standard sections are being shaded cannot be verified here. We quote standard sections, 500 tons and over, $28; less than 500 tons to carload lots, $30; less than car lots, $32; second quality rails, $27; 25-pound rails, $28 to $30; 12-pound rails, $30 to $32, with regular differentials for intermediate sizes. Track supplies, mill shipments, angle bars, 1.80c to 1.90c; spikes, first quality, 2c to 2.10c (out of store, 2.20c to 2.30c rates); second quality, 1.70c to 1.80c; track bolts, 3½ x ¾, with square nuts, 2.70c to 2.80c per 100 pounds; with hexagon nuts, 2.85c to 2.95c, with usual differentials for other sizes.

Wire and Wire Nails.—Producers report a falling off in demand, and the leading interest states that in some cases it is meeting the cut prices on barbed wire and wire nails made by independent manufacturers. No change in prices, however, is announced, and we quote to jobbers, Chicago delivery, as follows: Wire nails, carload lots, $2.15; less than carload lots, $2.20. Cut nails, steel, carload lots, $2.05; less than carload lots, $2.10. Plain wire, $2.05c carloads, and $2.15 in smaller lots; galvanized plain wire, carloads, $2.35; smaller lots, $2.40. Painted barb wire, carloads, $2.45; less than carloads, $2.50; galvanized, carloads, $2.75; less than carloads, $2.80; staples, carloads, $2.30; smaller lots, $2.35; galvanized, carload, $2.70; smaller lots, $2.75. Bale ties, 82½ and 5 percent discount f. o. b. Waukegan on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet or De Kalb with actual freight allowed not exceeding 50 cents per 100 pounds.

Coke.—Demand in this city is very quiet owing to the stagnation in the foundry trade, though from far Western and Southwestern points a good tonnage is being shipped consequent upon the strike in the coal mines of Colorado. Standard 72-hour Frick coke is held firm at $2.65 at the ovens, though other brands of Connellsville coke are being offered as low as $2.40 at the ovens. New River and Pocahontas cokes range from $5 to $5.25 Chicago.

Old Material.—The market is devoid of any interesting features, and may properly be characterized as dead. There is no demand, the only transactions heard of being in lots required for the completion of contracts made weeks or months ago. The following quotations are nominal, representing dealers' selling prices, gross tons:

Old iron rails	$15 00 to 15 50
Old steel rails (mixed lengths)	9 50 to 10 00
Old steel rails (long lengths)	13 00 to 13 50
Relaying rails	24 00 to 25 00
Old wheels	15 50 to 16 00
Heavy melting steel	10 00 to 10 50
Mixed country steel	8 50 to 9 00

The following are selling prices for net tons:

No. 1 R. R. wrought	$12 00 to 12 50
No. 2 R. R. wrought	10 50 to 11 00
Shafting	12 50 to 13 00
Dealers' forge No. 1	10 50 to 11 00
No. 1 busheling and wrought pipe	9 00 to 9 50
No. 1 cast	11 50 to 12 00
Heavy cast (300 pounds and over)	9 00 to 9 50
Agricultural malleable	10 00 to 10 50
Iron axles	15 00 to 15 50
Steel axles	12 50 to 13 00
No. 1 boilers, cut	9 00 to 9 50
Cast borings	3 50 to 4 00
Mixed borings, etc.	3 50 to 4 00
Wrought turnings	6 50 to 7 00
Machine shop turnings	6 50 to 7 00
Iron axle turnings	7 00 to 7 50
Steel axle turnings	6 50 to 7 00
Stove plate and light cast scrap	9 00 to 9 50
Old iron splice bars	12 50 to 13 00

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, Nov. 24.

Recent readjustments of prices have not brought a large amount of business, but that was not expected, and the present quiet is not regarded as a cause for alarm. It is not believed that there will be much improvement before the middle of January and perhaps not until the lowering of labor costs permits further reductions in prices.

Pig Iron.—On desirable business, $9 Birmingham can now be done on Southern No. 2 iron, which would be $12.85 Cleveland, while $8 Birmingham is the usual price for gray forge. On small lots, however, $9.50 for No. 2 is the prevailing price, and some companies have declined to go below that quotation for any business. Northern furnaces are still very reluctant to meet Southern prices, and $13.50 at the furnace for No. 2 is the lowest reported price, while some furnaces ask $14. Buying of Lake Superior charcoal iron is being confined almost entirely to lots from carloads up to 200 or 300 tons, and on such orders about $17 to $17.50 is the price, but a large order could be placed at $16.50. One very large producer reports that it is selling about one-third of its output. Reduction of production of charcoal iron will probably be decided upon at an early date. We quote as follows for Cleveland delivery, save on Northern gray forge, which is at Valley furnace:

Bessemer	$15 10 to 15 35
No. 1 Strong Foundry	14 75 to 15 25
No. 2 Strong Foundry	14 00 to 14 50
No. 3 Foundry	13 75 to 14 25
No. 2 Southern	12 85 to 13 35
Gray Forge, Valley furnace	12 75 to 13 00
Gray Forge, Southern	11 85 to 12 00
Lake Superior charcoal	16 50 to 17 00

Finished Material.—The most interesting feature of the market has been the calling for bids in 2,500 tons of structural material for the new Rockefeller building, to be submitted by Dec. 14. As there is an agreed price of shapes, the competition will be on estimates on fabrication and erection of the steel. There is some discussion as to whether the reduction of the bid for erection to a nominal amount would not be a violation of at least the spirit of the agreement. Shipbuilders, whose prospect for orders

is not rosy, are expressing disappointment because the prices of plates and shapes have not been reduced with those of other lines of finished material. They had hoped that a reduction of $5 or $6 per ton would have resulted in the placing of orders for a number of vessels. The present price of rails, $28, is encouraging mills which reroll, and they are making unusual efforts to get business and are succeeding when rerolled rails will answer the purpose. Specifications against contracts for steel bars are coming in satisfactorily, but there is not much new business at the new prices, 1.30c for Bessemer and 1.40c for open hearth, Pittsburg. Bar iron is still weak with reports of sales as low as 1.25c at the mill, the usual price being 1.30c. Published quotations on sheets are not a very reliable guide. The recent announcement of reductions has resulted in specifications coming in much more freely on old contracts on which prices have been adjusted to conform to the new schedule. The quotations of the principle producer for mill sales through jobbers are as follows: No. 10, 1.85c; No. 11-12, 1.90c; No. 14, 1.95c; No. 16, 2.05c; No. 27, 2.40c; No. 28, 2.50c. Galvanized, 75, 10 and 5 off for ordinary business and 2 percent additional off on desirable orders. Out of stock, prices are as follows: No. 10, 2.10c; No. 12, 2.15c; No. 14, 2.20c; No. 16, 2.30c; No. 18-20, 2.40c; No. 24, 2.45c; No. 25-26, 2.50c; No. 27, 2.55c; No. 28, 2.65c; No. 30, 3.10c. Galvanized, out of stock, No. 16, 75 and 7½ off; No. 18-20, 75 and 10 off; No. 22-28, 75, 10 and 2½ off.

Old Material.—The first signs of activity in scrap which have been noticed for a long time were furnished this week by a demand from Pittsburg for heavy melting steel at from $9 to $10, a price lower than has prevailed for three years. Sales are being made on that basis and prices on nearly all kinds of scrap are lower. Cast borings have sold at the unprecedentedly low price of $2.50. We quote the following gross tons, Cleveland:

Old iron rails	$16 00 to 17 00
Old steel rails (over 6 feet)	10 00 to 11 00
Old steel rails (6 feet and under)	11 00 to 12 00
Old car wheels	13 00 to 14 00
Steel boiler plates	10 00 to 11 00
Malleable iron (railroad)	11 00 to 12 00
Malleable iron (agricultural)	10 00 to 11 00
Heavy steel	9 00 to 10 00

We quote the following net tons:

No. 1 R. R. wrought	$11 50 to 12 00
Mill scrap	10 00 to 11 00
No. 1 machine cast scrap	10 00 to 11 00
Iron axles	15 00 to 16 00
Axle turnings	9 00 to 10 00
No. 1 machine cast scrap	11 00 to 12 00
Iron axles	16 00 to 16 50
Axle turnings	10 00 to 11 00
Wrought turnings (free from cast)	7 00 to 8 00
Uncut wrought iron boilers	6 00 to 7 00
Grate bars	9 00 to 10 00
Pipes and flues (clean)	9 00 to 10 00
Tank iron	9 00 to 10 00
Hoop and band iron	9 00 to 10 00
Sheet iron	7 00 to 8 00
Wrought drillings	7 00 to 8 00
Stove plate	9 50 to 10 00
Steel axles	13 00 to 14 00
Cast borings	2 50 to 3 00

CINCINNATI.

Nov. 24.

From the developments of the week under review, it seems apparent that some producers of Southern pig iron realize that further concessions in prices at this time are not necessary, as the basis now prevailing is lower than producers in other sections have made, and as the Southern market is feeling the demand that the low price basis has attracted from melters a steadier tone is now in evidence. It is reported that the shipments of Southern pig iron are now larger than the production and that the surplus stocks in the South are on the decrease instead of increasing.

The foundry coke market remains dull and easy, with prices irregular. Quotations from $2.35 to $2.60 f. o. b. ovens are the ruling figures on ordinary lots.

Pig Iron.—Increased activity has been the feature of the market the past week and a large pipe manufacturing interest has taken up considerable iron at prices based on $9 Birmingham for No. 2. This buyer has taken in the neighborhood of 15,000 tons of various grades. One lot of 10,000 tons was included in the purchase and there were several other lots running up to 1,000 tons and over. One sale of 5,000 tons was made to another purchaser at $9.25 Birmingham for No. 2 foundry. At the close of the week several fair sized orders were placed in this territory at $9.25 Birmingham. A number of inquiries are pending and it is significant that buyers claiming to be able to buy at $9 have not placed their orders. It is the general impression in the trade now that $9.25 Birmingham is the inside quotation obtainable from any Southern furnace. There is decidedly more iron being sold than last week. The single car lot and up to 200-ton orders have also been more plentiful. The bulk of the business has been in Southern irons, and Ohio product is not now in competition. Some of the inquiries coming into the market are for deliveries extending into next year. On such business nothing below $9.25 has been heard. The $9 price was only for prompt shipment. The following are the prices current f. o. b. Cincinnati:

Southern Foundry No. 1	$12 50 to 13 00
Southern Foundry No. 2	12 00 to 12 25
Southern Foundry No. 3	11 50 to 11 75
Southern Foundry No. 4	11 25 to 11 50
Southern Foundry No. 1 soft	12 50 to 13 00
Southern Foundry No. 2 soft	12 00 to 12 25
Gray forge	10 75 to 11 25
Northern Foundry No. 1	15 90 to 16 15
Northern Foundry No. 2	15 40 to 15 65
Northern Silvery (8% silicon)	18 65 to 19 15
Southern car wheel iron	19 00 to 19 75

Finished Material.—Some price changes have been made in sheets and the leading interest has put out some lower prices. Independents are following the reduction and the market is irregular. Bar iron remains easy and unsettled, with buyers regarding the market as hazardous even at the concessions now available. Galvanized sheets are lower. The demand is light and buyers are only providing for their immediate wants and from the way they are ordering requirements are light. For bar iron a quotation of 1.41c Cincinnati is now an open price on car loads. Steel bars are quoted 1.43c base, half extras, with the retail price 1.90c for iron and steel out of store. Galvanized sheets are being quoted at 75 and 10 and 5 and 2½ percent off. We quote black sheets, No. 27, at 2.45c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.90c; No. 27, 2.80c; No. 16, 2.55c; No. 14, 2.45c; No. 12, 2.35c; No. 10, 2.30c. Tank plates are easy and sell out of store at 2c for ¼-inch and 2.10 for 3-16-inch. Beams and channels are quoted at 1.90c to 2c from stock, and angles at 1.90c to 2c for base sizes.

In merchant pipe there has been no change in the market, although independent mills are underquoting the leading interest on the smaller sizes. This has not been done as yet to a sufficient extent to disturb the situation, however, and locally this competition is not felt to a perceptable degree.

MERCHANT PIPE.
(Basing Discounts.)

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed. Wrought Iron Pipe. Black. Percent.	Guaranteed. Wrought Iron Pipe. Galv. Percent.
⅛, ¼, ⅜ inch	66.7	56.7	63.7	53.7
½ inch	68.7	58.7	65.7	55.7
¾ to 6 inch, inclusive	73.7	63.7	70.7	60.7
7 to 12-inch, inclusive	67.7	57.7	64.7	54.7

BOILER TUBES.

	Steel Percent.	Iron Percent.
1 to 1½ inch	41.3	27.7
1¾ to 2½ inch	54.2	36.7
2¾ to 5 inch	59.7	46.7
6 to 12 inch	54.2	36.7

Old Material.—The larger dealers are inclined to hold the market at its present level but the smaller dealers are offering at irregular prices and the market is unsettled and easy. We quote:

Old No. 1 railroad wrought, net tons	$12 00 to 12 50
Cast machine and foundry, net tons	11 00 to 11 50
Old iron rails, gross tons	17 00 to 18 00
Old steel rails, gross tons	13 00 to 14 00
Old short lengths, gross tons	13 50 to 14 50
Old iron axles, net tons	15 00 to 16 00
Stove plate, net tons	9 00 to 9 50
Wrought turnings, net tons	11 00 to 11 50
Cast borings, net tons	6 00 to 6 50

PHILADELPHIA.

Nov. 24.

There is a better feeling in the market and a prospect of large sales of pig iron being made before the first of the

year. Several sales of from 1,000 to 5,000 tons each have already been made and there is a demand for prompt shipment on all small orders. Bar iron is dull and mills are in operation only four days of the week. Efforts to reduce costs at all kinds of plants will be continued. Further reductions in prices are not expected.

Pig Iron.—There has been considerable activity for a few days. Consumers had allowed their stocks to decline to very low points. Furnaces still have considerable iron on hand, but restriction of output has had good effect on the market. For Southern iron prices are lower than they have been for several years. We quote as follows: No. 2 X foundry, $15 to $15.50; No. 2 plain, $14.25 to $14.75; standard gray forge, $13.75 to $14.25; ordinary gray forge, $13 to $13.50; Southern No. 2 X, rail shipment, $13.25 to $13.50; Southern No. 2 X on dock, $12.75 to $13.

Steel.—Orders are not numerous, but prices are steady at $24.25.

Finished Material.—Export business has not developed to any large extent and home demand is slack. The manufacturers are acting with unusual harmony in curtailing production, as was shown by the recent decision of the Eastern Bar Iron Association to operate the mills only four days per week. The checking of production has prevented demoralization. We quote: Plates, ¼-inch and thicker, 1.75c to 1.80c; beams, angles, channels, 1.75c to 1.80c; small angles, 1.50c to 1.60c; steel bars, 1.45c to 1.50c; refined iron, 1.40c to 1.45c.

Old Material.—There is very little buying and prices are more or less nominal. We quote: Old steel rails, $12 to $12.50; miscellaneous heavy steel, $12 to $12.50; low phosphorus scrap, $20 to $21; old steel axles, $15 to $16; old iron axles, nominal, $18 to $19; old iron rails, nominal, $15 to $16; old car wheels, nominal, $14 to $15; choice R. R. No. 1 wrought, $15 to $15.50; country scrap, $14 to $14.50; machinery cast, $12.50 to $13.50; No. 2 light scrap, forge, $11 to $12; No. 2 light scrap, ordinary, $9.50 to $10; axle turnings, $10.50 to $11; wrought turnings, $9 to $10; wrought turnings, choice heavy, $10.25 to $10.75; cast borings, $6.50 to $7; stove plate, $10 to $10.50; wrought iron pipe, $11.50 to $12.

BIRMINGHAM, ALA.

Nov. 24.

Southern pig iron producers still continue in the attitude of competing with themselves alone in the sales of iron. Since the disruption of the Southern pig iron association prices have gone down to as low as $9 for 2 foundry, producers failing to call a halt when it was announced that Northern iron could go no lower to meet the prices on Southern pig. The fact that large stocks had accumulated during the period when the Southern association was attempting to steady the downward course of the market proved a very bearish feature of the situation, and by some interests it is understood any and all prices have been met in order to get business that would take away any of this accumulation. While $9 is reported as having been the figure at which some sales were effected in the past few days, this has not been absolutely confirmed, and where prices approximating this figure are known to have been made, it was generally for iron a little off as to analysis, some element varying considerably from the regular grade. Where high silicon No. 2 foundry has been sold, it has brought in some cases as high as $9.75 in good lots. Where buyers seek to have deliveries extended over 90 days, as a general thing they are told that present prices are only for immediate shipment as most plants had rather consider the advisability of suspending operations than anticipate doing business at the figures prevailing now for any part of the coming year. Thus far there has been practically no reduction in the cost of labor, which indicates that it is costing as much to produce iron as it did when it was selling at $25 per ton. A large tonnage was booked by Southern interests the past week, one concern announcing it had sold 40,000 tons this month. There is a still better inquiry this week, with some evidences of speculation entering the market. Thus far there has been no very serious shortage of cars for moving the iron sold, as the weather conditions have been excellent and cars in better supply than a year ago. With better buying there is a tendency to bring the grades closer together in price, though the differential of 50c is pretty generally observed. For standard brands we quote as follows:

No. 1 Foundry	$9.75 to 10 00
No. 1 Soft	9.75 to 10 00
No. 2 Foundry	9 25 to 9 50
No. 2 Soft	9 25 to 9 50
No. 3 Foundry	8 75 to 9 00
No. 4 Foundry	8 50 to 8 75
Gray Forge	8 25 to 8 50
Alabama Car Wheel, all grades	16 00 to 17 00

It is understood that these prices are for prompt or nearby delivery. It is a little difficult to say just what prices would take business for the first quarter of 1904. It is probable that an advance of 25c per ton would be asked by a majority of makers, and many are refusing to consider such business at all.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, NO. 150 NASSAU ST., NOV. 24.

Transactions in the local pig iron market during the past week were in lots ranging from 25 to 500 tons, and represented a good tonnage. Quick shipment was called for as a general rule. As has been the case for weeks past, Southern irons monopolized the market, and sold at prices averaging from $1 to $1.50 lower than Northern grades. The two leading Southern interests are engaged in a keen rivalry for business, and one of them will always undersell the other, no matter what the latter's price may be. As a result lower prices have prevailed. All sorts of prices are heard for No. 2 Southern foundry, and it is stated that $9 Birmingham has been the basis of some sales. Quotations range from this figure to $9.50, but no difficulty is experienced in getting iron at $9.25. Deliveries from the Birmingham district continue aggravating, because of the car shortage. Reports that Southern furnaces are accumulating considerable iron are circulating, and many buyers have been influenced by them. In Northern irons, there is very little doing in this vicinity, and prices are irregular in consequence. Foundrymen have little or no iron in their yards, and from all accounts are fast exhausting their order lists. New York prices are as follows: Northern No. 1, $15.50 to $16; No. 2, $15 to $15.50; No. 2 plain, $14.50 to $15; Southern No. 1 foundry, $13.50 to $14; No. 2 foundry, $12.75 to $13.25; No. 3 foundry, $12.25 to $12.75; No. 4 foundry, $11.75 to $12.25.

Billets.—Outside of reports of cutting by independent makers, to the extent of $1 to $2 per ton, the market is without interest. Current trading is of small proportions.

Rails.—Business is quiet, with railroad propositions in a more satisfactory condition for early closing than could be noted heretofore. The opening of the new year is expected to bring in a good supply of orders, if the financial situation improves. Standard sections are $28 at mill.

Finished Iron and Steel.—In structural material the month so far has been the dullest of the year, the American Bridge Co. having only booked 12,000 tons to date. Independent mills are in a particularly bad way for orders. Interest is now centered in the big propositions that will be let next month. On Dec. 15, bids on the Pennsylvania tunnel contract, calling for about 80,000 tons, will be opened. The specifications contain no strike clause, and provide a penalty of 1-50 of 1 percent for each day's delay. Railroads are expected in the market next month also for about 20,000 tons. The Pennsylvania Steel Co. can now go ahead with its Blackwell's Island contract, the litigation against the award having been dismissed. Bars are still easy. Prominent Eastern makers were in this city during the week and decided to curtail production by about one-third. In the meantime the selling of accumulated stocks has been at concessions. Plates are dull and agents report new business very scarce. Sheets are unchanged, and no activity is expected for the remainder of the year. New York prices are as follows: Beams and channels, 15 inches and under, 1.75c to 1.90c; angles, 3 to 6 inches, 1.75c to 1.90c; zees, 1.75c to 1.90c; bulb angles, 2.05c to 2.35c; deck beams, 2.05c to 2.25c; sheared steel plates, tank, 1.75c to 1.80c; flange, 1.85c to 1.90c; firebox, ordinary, 1.95c to 2.00c; refined iron bars, 1.30c to 1.40c; soft steel bars, 1.40c to 1.45c; steel sheets, in carloads, New York, No. 28 black, 2.50c to 2.70c; galvanized, 75 and 10 to 75 and 5 off.

INDEXING BY NUMBERS ALONE.

Commenting upon the article on "Names and Symbols," by Mr. Oberlin Smith, in *The Iron Trade Review* of Oct. 1 Robert J. Hearne says in the *American Machinist*:

It may seem presumptious on my part to say so, but I cannot too strongly reprobate the whole scheme of using symbols for any purpose except "on the side," in which case they may have an auxiliary use. For my part, I want none of them. This is no sudden conviction on my part, but the result of twenty-five years' experience in the handling of duplicate parts —for sewing machines, principally. Numbers cost nothing, and can be used to any extent, and in succession, for any purpose.

Numbers should be used arbitrarily, without making any attempt whatever to give a certain value to any number, or combination of numbers. For instance, I advocate and use numbers such as this: No. 4302, base for 12-inch fan; No. 4303, complete assembled No. 5 pinking machine; No. 4304, spindle for automatic spooler; No. 4305, complete assembled No. 14 sewing machine; No. 4306, complete 12-inch fan, assembled; No. 4307, set-screw for hook-shaft, No. 14 sewing machine; etc., etc.

We use no other numbers for any purpose in our shop or office; for instance: No. 4302 is catalogue number of pieces or machine, No. 4302 is number of cost card of piece or machine, No. 4302 is drawing number, No. 4302 is shop order number, No. 4302 is pattern number, No. 4302 is casting number, etc., etc. When you have this number you can find any information you desire about any piece or machine. No attempt whatever is made to have numbers in sequence. Card No. 4303, complete 12-inch fan, may say, "This is composed of Nos. 12, 13, 14, 43, 69, 307, 2930, 4167," etc. It makes no difference what the parts were originally made for. No. 12 may have been a part of a sewing machine, No. 13 may have been a part of a small counter, and so on.

Any attempt to lay out numbers will fail. One cannot foresee what changes will be made. I have in mind a catalogue now in which originally a certain number, No. 22, was used for one part, which is now replaced by seventeen separate parts numbered from 22A to 22Q. Even if it were desirable to keep numbers in sequence, it is impossible for two reasons: the one, as given above, that no one can foresee changes and will surely come to the time when he has used up the numbers allotted, and the other is that numbers will be dropped, leaving gaps.

It is almost impossible to remember symbols, particularly such outrageous ones as Mr. Smith suggests. Think of a tool clerk looking for "P. S. G. 5—21 C—13—B," or a man asking for it, or a customer ordering by such a number.

If kept numerically, he would have no trouble in finding, say, No. 23742. He doesn't need even to know what it is, except that it is a tool. The presumption is that if a man is looking for a thing, he knows if he wants a drawing, a shop order, a cost card, a pattern, a casting, a machine, or a part, and will not look for a drawing in the casting bin, or *vice versa*. But I assume that he doesn't even know what No. 4302 is; well, the numerical index will tell him fast enough.

Any amount of sub-indexing can be done, but the vital point is, that once a number is given to a thing, that number is never used for another thing, symbol or no symbol. The number becomes identified with it, and absolutely identifies it. It is is astonishing how easy numbers are to memorize. I have been through all the symbol game, from A to Z, and AA to ZZ, too, and the fractions also, from ⅛ to ½, and the plate numbers in Roman numericals I, II, III, etc. Look at what the Singer Mfg. Co. do—numbers only, nothing more, and they stamp numbers on the pieces also. The General Electric Co. do likewise. They couldn't do business if they didn't use the numerical scheme. A motor may be called, for instance, "5 h. p., Type C. E., Direct Current, Multipolar, 230 volt, slow speed" for the benefit of the public and for advertising purposes, but catalogue No. 23742 will positively identfy it for the company's own use. If the voltage is changed from 230 to 115, no attempt is made to have it, say, No. 23741; it might be No. 6739.

I have no quarrel with Mr. Smith's nomenclature, but will say that what names may suit him won't suit others, but numbers are the same the world over. I understand "kerosene oil" is called "coal oil" in some places.

As to sub-indexing, we subdivide our lines numerically into what we call sections, and subdivide again numerically the sections—*i. e.*, Section 3, Pinking Machines—and then number the machines, No. 1 to No. 17, for instance. But you can't get mixed up, because the section numbers don't interfere with anything, and, if omitted, the number still identifies it. No. 19247 may be No. 9 Pinking Machine in Section 3, and No. 19248 may be a part for a No. 3 machine in Section 27.

If a part or machine is changed, but will replace a previous one, we use the same number, on the theory that it is the same thing, as far as we are concerned. But if any change be made so that part or machine will not replace a previous one, then it gets another number.

Alphabetical lists are a great help, but only as a *help* should they be used. Who has not run against this difficulty: Hack saws; hack saw blades; blades, hack saw; saws, hack; frames, hack saw; machines, hack saw. And yet the first name answers for all. The man who makes hack-saw blades thinks "Hack Saws" is good enough, but how about the one who has them all on hand?

Mr. Smith speaks of suitable index *books*. Is it possible at this late day he recommends *books?* Has he ever rewritten a book when it was full? Has he never found it impossible because of changes to keep a record in its proper place in a book? *Card Index* is the remedy, not books. Cards are always literally "up to date." We write cards daily, as all others do who use them. Mr. Smith says the symbol plan won't apply to bulk goods, but the numerical plan will. No. 2342 can be "Winter Wheat Flour" and No. 1347 can be "Cornmeal." I have spent a great portion of the last five years in the practical solution of this problem, in company with many other minds greater than mine, and I feel that the problem is solved.

The Standard Machinery Co., of Providence R. I., recently incorporated with $100,000 capital, announces that it has acquired the business and plant of the Mossberg & Granville Mfg. Co. and will manufacture power presses, drop presses, roller bearing roller mills, draw benches, and Mossberg roller bearings. John T. Maguire is president, Frank Mossberg vice president, M. J. Houlihan treasurer, Thos. Z. Lee secretary and L. M. Lincoln assistant secretary. It is stated that this is not a reorganization of the Mossberg & Granville Mfg. Co. and that the stockholders of the new company, excepting Mr. Mossberg, were not connected with that company.

The enormous steaming capacity required in boilers on the large ocean steamships can only be attained by means of artificial draft. The fan blower may be found in all these steamships supplying air to the boilers as "forced draft." The International Navigation Co.'s steamship "St. Louis" has eight new Sturtevant fans for this purpose, each one of which is driven by a Sturtevant compound engine.

Furnace B of the Colorado Fuel & Iron Co., at Pueblo, Col., which was built in 1890-1, is to be torn down and rebuilt. Furnace E, which was completed last year, is to be put out for relining. Meantime Furnace F will be hurried to completion.

Pursuant to the order of the referee in bankruptcy, the property of H. Silberman & Co., located at 192 Scranton avenue, Cleveland, including machinery, fixtures, office furniture, scrap iron and leasehold interest, will be sold at auction, Nov. 30. The scrap iron is appraised at $11,585.85, and the machinery at $6,145.75.

The Anderson Tool Co., Anderson, Ind., manufacturer of grinding machinery, reports a satisfactory volume of business in its gasoline engine department. The company has lately installed a new electric light equipment and increased its power plant by the addition of one automatic engine.

THE IRON TRADE REVIEW

Devoted to the Machinery, Metal-Working and Foundry Trades and Iron and Steel Manufacture.

PUBLISHED EVERY THURSDAY BY

THE IRON & STEEL PRESS CO.

ROSE BUILDING, CLEVELAND, OHIO.

G. H. GARDNER, President and Treasurer,
JOHN A. PENTON, Vice-President,
A. I. FINDLEY, Secretary

A. I. FINDLEY, - - - - - - - - EDITOR.
ROBERT I. CLEGG, - - EDITOR MACHINERY DEPARTMENT.
GEORGE SMART, - - - - - ASSOCIATE EDITOR.

CHICAGO: 1115 Monadnock Block, GEO. H. GRIFFITHS, Manager.
PITTSBURG: 429 Park Building, A. O. BACKERT, Manager.
NEW YORK: 150 Nassau St., D. C. WARREN, Manager.
THE CENTRAL WEST: R. A. EVANS, Manager.

Subscription, $3.00 per annum. To Foreign Countries, $4.00.
Advertising Rates Furnished on Application.

The Cleveland News Co. will supply the trade with THE IRON TRADE REVIEW through the regular channels of the American News Co.

ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER.

NOVEMBER 26, 1903

STEEL CORPORATION FINANCING.

The sudden termination of the contract between the United States Steel Corporation and the stock-bond conversion syndicate, at the instance of the former, permits a summary to be made of the results accomplished. It is true the entire conversion now allowed has not been completed, a few odd million remaining, but the syndicate will shortly have accomplished this, and will also pay the 75 percent balance due on that portion of the bonds subscribed for in cash which have not already been paid for in full.

The net result is that the steel corporation retires $150,000,000 of 7 percent preferred stock, and assumes a like face value of 5 percent 60-year sinking fund bonds; while it issues an additional $20,000,000 of such bonds, for which it receives face value in cash, from which it pays out $6,800,000 in commissions, making the net cash received $13,200,000. The transaction can be viewed in the light that the exchange of a 5 percent obligation for a 7 percent obligation has been effected without cost to the corporation, to the extent of $150,000,000 face value, while on $20,000,000 face value of bonds it has received but $13,200,000, equivalent to selling these bonds at $66 for every $100 face value, a discount of 34 percent.

Despite the great amount of criticism, intensified of late by a condition in which the depression of the preferred stock became an advantage to the syndicate, the operation has really been a favorable one to the steel corporation. It was not permitted by law to issue the bonds for cash unless it received par, which was impossible. The bonds have actually sold in the open market at less than $66 on the hundred, and while on an average they have sold at a higher price, the difference between what may be assumed as their value and the $66 assumed as having been received for them represents really a moderate price to pay for the conversion of sevenfold more securities without any cost.

That the operation has been a very favorable one to the corporation does not mean that it has been unprofitable to the syndicate. Such a conclusion would be as unwarranted as the assumption, so frequently made in the past year and a half, that a profit to the syndicate meant a loss to the corporation. The syndicate made profits through stock market operations, which it was not possible that the corporation should undertake. Except in so far as the $20,000,000 bonds taken for cash by the syndicate can be sold for more than 66 percent of their face, the entire profits of the syndicate come from arbitrage operations, selling bonds at a higher price than the current market rate for the preferred stock. The public generally refused to convert its stock, yet when the opportunity for such conversion expired paid considerably higher prices for the bonds than for the stock. Such a turn was not foreseen, but the corporation could not have taken advantage of any such development had it endeavored to manage the whole conversion itself.

In round numbers, the steel corporation's securities now stand as follows:

$ 60,000,000	bonds, etc., of subsidiary companies, held in small part in sinking funds and not retired.
304,000,000	5 percent first mortgage collateral trust bonds, of which $247,000 are held to offset Carnegie Co. bonds not exchanged, and a larger sum exists in the regular sinking fund.
170,000,000	5 percent second mortgage bonds.
360,000,000	7 percent preferred stock.
508,000,000	common stock.
$1,402,000,000	

The charges against these are as follows:

Subsidiary bonds:	interest, about	$ 3,300,000
	sinking fund, about	1,600,000
First mortgage bonds:	interest	15,200,000
	sinking fund	3,040,000
Second mortgage bonds:	interest	8,500,000
	sinking fund	1,010,000
Total bond requirements		$32,650,000
Preferred stock dividends		25,200,000
Disbursements ahead of common stock		$57,850,000

These payments represent about $4 per ton of finished material to cover bond requirements, and about $7 per ton to include preferred dividends, making no allowance for various profits outside of finished steel products, nor for an increase in output, which the corporation is bound to make even if trade conditions are only fairly satisfactory.

The $150,000,000 preferred stock retired required $10,500,000 annual dividends. The charges on second mortgage bonds aggregate $9,510,000, showing the following gains:

(1) $990,000 saved annually in disbursements.

(2) $13,200,000 cash secured at no expense.

(3) The equivalent of retiring $150,000,000 of the old preferred stock, within 60 years, at no cost.

The actual retirement can be accomplished earlier, since the entire sinking fund of $1,010,000, provided for the $250,000,000 bonds proposed to be issued, is being set aside, although only $170,000,000 will be actually outstanding.

The only disadvantage under which the corporation stands is that in case conditions should arise where it would suspend preferred dividends, the charges accruing to the bonds are of a different nature from the cumulative dividends of the preferred stock, but by virtue of the somewhat unusual provision in the second mortgage, that no legal action can be taken on de-

fault in interest payment until such default shall have been continuous for two years, the bonds are not much of a menace to the integrity of the corporation. Nor can it be considered the business of the financial management of a going corporation, supposedly properly formed and managed, to consider such contingencies as a complete default in preferred dividends for two years. If so, it can be of no consequence whether there is involved cumulative preferred dividends or bond interest.

ADVANTAGES OF A LULL IN INDUSTRY.

The compensations for the unfavorable conditions that now surround the iron and steel and metal working trades are not as apparent today as they will be later. A period of large profits easily made and of large outputs easily sold does not develop the best business habits nor tend to economy in manufacture. It has something of the same effect upon the morale of a manufacturing establishment that suddenly acquired wealth has upon the individual. Prosperity does not encourage conservatism and it is a maxim among speculators that a man will stand a loss longer than he will a gain.

Herein is the reason for the equanimity with which the present turn in the tide of business is being borne. Manufacturers have realized that the months of crowded shops and of insistent demand have brought much that was unhealthful and that only high pressure prosperity made tolerable. Wage advances have come easily. The unions have largely had their way. With the wage basis from 50 to 100 percent greater than in the depression of the 'nineties, the employer has seen his labor cost mount to astonishing proportions because labor at high prices has been less efficient than at lower figures.

On the other hand it will be found that as wage reductions are made—and the movement is already well under way at iron and steel works—there will be more work done at the lower wage than at the higher. Shop managers, moreover, will have the opportunity now of picking the most efficient men, instead of gladly taking any who applied, as many were compelled to do. Night work, always costly for a variety of reasons, can be largely cut down and in many cases dispensed with entirely. The spur of an excess of men and a shortage of jobs will be constantly upon the men retained in service. Supervision will mean a sharper hunt for leaks and a closer study of economies. Costs will be more narrowly scrutinized by responsible heads, and in the larger industries, involving a number of departments, the competition between the latter will develop team work and give an incentive that could not exist when the emphasis was put on getting out work for delivery at the earliest possible day.

It was the necessitous days of 1893 and the few years following that brought into many an American shop the regime under which it was possible to manufacture machinery and deliver it at a profit thousands of miles away in the shop centers of Europe. The way was found because it had to be found. Similarly today, not only steel works and rolling mills but machinery and metal-working industries throughout the country are perforce taking up with new interest the old problem of reducing unit costs to meet competition in more distant markets. It will be no surprise to those who have had experience with inefficient labor during the boom, to be told that many managers are now getting a larger product with a reduction in working force. Results under the premium system, which were quite satisfactory even in the high pressure period, may well be expected to show marked betterment in the testing time upon which industry has recently entered. Many a concern that has been forced to postpone needed adjustments in its organization will find that a rearrangement can now be brought about with little friction and will produce permanent economies.

UNUSUAL GOLD IMPORTS.

The United States at this time is certainly not in need of gold but it is coming to us in the normal course of international trade. Moreover the movement goes on in spite of the obstacles interposed by London banking interests desirous of maintaining or obtaining strong reserves. Continental financial centers, too, are loth to part with gold at the moment, and all have resorted to the usual devices to protect their gold reserves. Exports of cotton and grain have been so liberal of late as to give a supply of commercial bills sufficient to depress the market for exchange to a point where gold can be imported at a profit; in fact, below the figure at which we would ordinarily draw gold.

The drain of currency from New York to the West and South recently has been in such volume as to keep interest rates high in New York as well as in London, a fact contributing to overcome the artificial restrictions against our importations of gold. Under present conditions there seems to be no inducement to accumulate American credits abroad. Evidently, too, there are few if any American securities held abroad, otherwise they would be sent to us in place of gold.

In some measure at least our inelastic currency system is responsible for our gaining gold—when we have sufficent—at the expense of Europe, where supplies are deficient. Our gold cannot perform its functions readily because of the restriction placed upon national banks in the use of their credits. New York reserves are drawn upon because banks in the sections needing currency cannot supply the notes required directly; neither can the reserve banks expand their circulating notes readily. The result is higher interest rates.

Such a combination of circumstances as we now have is without precedent. Ordinarily there is more or less gold in transit between South Africa, Australia or India and London, and such consignments may be purchased for reshipment on arrival. But for several weeks no such gold has been available and London bankers have competed with American agents for the gold bars in the open market, resulting in the advance in the price of bars to 78s per oz., the highest price that has prevailed since 1893. But even this rise has been unavailing to check the golden current to the West. The Bank of England, however, has not as yet advanced its discount rate above 4 percent, giving as a reason its reluctance to disturb trade by causing higher interest rates. The Bank of France has been preparing for the Crédit Foncièr loan of $60,000,000 and the city of Paris loan of $20,000,000 and hence has thrown the

burden of meeting the American demand upon London.

Events of the past week have shown how closely London bankers gauged the present gold movement, when they predicted that it would not go above $10,000,000. Imports into this country on the dip in the exchange market aggregate $9,000,000, all of which will have arrived in New York by the end of this week. Of this amount $3,500,000 arrived in this country on Saturday last too late to be reflected in the bank statement, so that the money market is less stringent than it seems on the surface.

It is now known that the recent foreign purchases of cotton aggregate $40,000,000 and that United States railroad credits created in London by foreign loans bring the total close to $50,000,000. As but $9,000,000 gold has been drawn to correct the balance, it follows that there must have been about $40,000,000 of American debits held in London, if the international exchange market has now found its equilibrium.

But now comes the Panama Canal settlement, which will be an important factor in the situation. If the treaty is signed and the deal consummated, which seems almost certain, there will be $40,000,000 gold to be paid to Parisian shareholders and $10,000,000 more to go to Central America. Such large transactions are usually anticipated and are handled very quietly. It may be, therefore, that provision for these settlements has already been made and that the wabbling exchange market of the past four days was one of the results.

New York Car Wheel Works Reorganized.

It has been developed at Buffalo that when Martin Carey purchased the plant of the New York Car Wheel Works of that city at auction in the bankruptcy court he was acting for a combination of creditors in which Joseph H. Berry, of Detroit, president of the Mantisique Iron Works, and R. L. Ginsburg & Sons, of Detroit and Buffalo, are interested. A certificate of incorporation of the New York Car Wheel Co. has been granted. The president of the company is Joseph H. Berry, of Detroit. The vice president is Solomon Ginsburg, of Detroit, and William G. Smith, who is connected with Mr. Berry, is secretary and treasurer. The other stockholders mentioned in the incorporation papers are Bernard Ginsburg, John Christian and Herbert E. Boynton, of Detroit, and Henry Ware Sprague, of Buffalo. The company is capitalized at $300,000. Each of the men holds 10 shares of stock, excepting Mr. Sprague and Mr. Boynton, who hold 5 shares each. Mr. Boynton was the attorney who has acted for Mr. Berry in most of the proceedings to date, while Mr. Sprague represented P. H. Griffin, president of the old car wheel works. Mr. Griffin is now in charge and will continue to be the manager of the works, which are now in operation.

A branch of the Associated Foundry Foremen has been organized in Indianapolis, Ind., nearly every foundry foreman in the city having become a member. W. Barmore has been elected president, W. Holmes secretary, and John Reynolds treasurer. The executive officers of the association are working with a view to the establishment of branches in all the important foundry centers of the country. Where such an organization is contemplated information can be obtained by addressing the general secretary, James A. Murphy, 114 West Twentieth street, Erie, Pa.

The stockholders of the Malleable Iron Co., Muskegon, Mich., have elected the following directors: Dr. J. H. Belt, Cleveland; H. J. Sherwood, Cleveland; Thomas Hume, W. H. Mann and E. L. Howe, Muskegon. The directors elected the following officers: President E. L. Howe; vice president, Dr. J. H. Belt; treasurer, Thomas Hume; secretary, W. H. Mann.

PERSONAL.

Geo. Sheldon, the new general superintendent of the Lackawanna Steel Co., of Buffalo, N. Y., entered upon the duties of his office Nov. 16. Mr. Sheldon will assume the duties performed by Vice President Reis since the resignation of General Superintendent Wehrum. The coming of Mr. Sheldon will allow Mr. Reis to give his undivided attention to the financial affairs of the company.

Wm. Miller, of Granite City, Ill., has been appointed manager of the Sharon plant of the American Steel Foundries, succeeding S. A. Wallace, transferred to Alliance, O.

Charles M. Schwab went from New York to Braddock, Pa., on Nov. 20 and on the following day turned over to the church authorities the new St. Thomas' Roman Catholic Church which he built at a cost of $125,000. Some years ago Mr. Schwab built St. Michael's Roman Catholic Church at Loretto, Pa.

George C. McKee has been appointed chief engineer for the Youngstown Foundry & Machine Co. He is at present employed in the drafting department at the Ohio works of the Carnegie Steel Co., and enters upon his new duties Dec. 1.

A. Suter, superintendent of shops of the Colorado Fuel & Iron Co., has resigned that position to enter the engineering office of the company. E. F. Rose has been appointed to fill the vacancy.

J. O. Emanuel Trotz has resigned as chief metallurgist of the United States Steel Corporation, Worcester, Mass. Mr. Trotz was superintendent at the Quinsigamond plant of the American Steel & Wire Co., Quinsigamond, Mass., until 1902 when he was given the position from which he has just resigned. He is now in London.

George M. Summers, superintendent of the Valley plant of the Republic Iron & Steel Co., Youngstown, O., has resigned his position, to take effect Dec. 1. He had been connected with the company and the Brown-Bonnell Iron Co., one of the firms the Republic Iron & Steel Co. absorbed, for 26 years.

J. J. O'Donnell, for a number of years superintendent of the rod mills at the Newburg (Cleveland) works of the American Steel & Wire Co., has tendered his resignation and retired from active business. The employes of the rod mills presented him with a diamond stud and a pair of cuff buttons set with diamonds, as a testimonial of their esteem.

Charles C. Henderson has resigned as manager of the Etna plant of Spang, Chalfant & Co., Pittsburg, Pa. He was connected with this concern for 20 years.

W. Aubrey Thomas, who was mentioned in our last issue as manager of the Jenifer Furnace Co., Jenifer, Ala., was one of the originally elected officers of the company, but for the past year has not been active in its management.

It is reported that President McMurtry, of the American Sheet Steel Co., will resign at the end of the year, preferring the retention of an Eastern residence to removing to Pittsburg. President W. T. Graham, of the American Tin Plate Co., is spoken of in connection with the presidency of the company formed by the consolidation of that company with the American Sheet Steel Co.

Geo. G. Blackwell, of Geo. G. Blackwell Sons & Co., Ltd., Liverpool, will be at the Hotel Walton, Philadelphia, until Dec. 1. After that, until Dec. 12, when he sails for England, his headquarters will be at Hotel Manhattan, New York.

The first of the steel colliers which the Flint & Pere Marquette is having built to ply between Conneaut, O., and Rondeau, Ont., was launched from the Buffalo yards of the American Shipbuilding Co. on Nov. 14. The new boat is 255 feet in length over all, and is to be called the Marquette & Bessemer No. 1.

The Murray Iron Works Co., Burlington, Wis., manufacturer of Corliss engines, informs us that it is doing a large and satisfactory business, and that the outlook is good; also that the extensive improvements and additions to the company's works which have been under way for some time are now completed.

THE BIRMINGHAM DISTRICT.

Some little iron has been warehoused and warrants issued against same, but to this date no great tonnage has been placed in warrant yards. Without doubt stocks are now decreasing, even though production thus far holds up well.

The Jenifer Furnace Co. was placed in the hands of a receiver by the United States court on bankruptcy proceedings the past week. J. W. McQueen, vice president of the Sloss-Sheffield Steel & Iron Co., was named as receiver. The furnace was blown out on Friday last.

John H. Wallace has been named as trustee for the Empire Coal & Coke Co., which was declared a bankrupt some weeks ago, when Chas. A. Stillman was appointed receiver. The mines are being operated under the direction of the United States Court.

The Gate City rolling mill was idle for some days, but it is understood will resume operations this week. It is expected that the steel mill at Ensley, as well as the Birmingham rolling mill will resume operations about Jan. 1. It is intimated that one chief reason for closing down now was that the labor would accept no cut in wages and therefore the plants could only be run at a loss. Meanwhile, the steel mill is undergoing a general overhauling.

The Seaboard Air Line is pushing its work of constructing the Birmingham extension since its recent financial arrangements were completed in New York. It is again rumored that the Illinois Central will soon run trains into Birmingham, as it is reported that arrangements have been practically completed for the use of the Frisco tracks part of the distance.

The Loop Draft Boiler Co. has been incorporated by local parties who will erect a plant in this vicinity for the manufacture of this style boiler recently patented. There is likelihood of a street car manufacturing plant being located at North Birmingham. It is understood strong inductments have been offered the proposed concern, and that Birmingham with its splendid railroad facilities is an inviting location.

The Sayre Mining Co. has recently completed its organization, having acquired large holdings of mineral lands near here. The promoters are parties formerly interested in the Pioneer Mining & Mfg. Co., now one of the constituent companies of the Republic Iron & Steel Co.

Lower Freight Rates for Steel Exports.

A cut of 33⅓ percent in the freight rates on all domestic steel products shipped for export was agreed on Nov. 19 by the representatives of the Trunk Line and Central Traffic Association and the steel manufacturing interests. The cut represents something like half the difference between the reduction the steel interests have been asking for and the percentage which the railroad interests talked of allowing. The argument was made that the railroads, in the additional tonnage gained, would be fully compensated for the lower rates. The reduction of 33⅓ percent includes steel rails. The rates from Pittsburg to the seaboard are now as follows: Rails, $1.73; plates, $2.60; billets, $2.46; structural steel, $2.60; and angles and bars, $1.86.

The votes of the sheet lodges of the Amalgamated Association on calling another convention to consider the removal of limitation on output in all union mills are now in. A majority of the lodges favor calling a convention and it remains for President Shaffer to name a date. He will probably do this before the end of the week.

A contract has been let for the execution of a colossal statue of Vulcan, to represent the Birmingham district of Alabama at the St. Louis Exposition. The design is by G. Moretti. It represents Vulcan with his right hand clasping a hammer resting on an anvil, while the left holds aloft an arrow head. The height of the figure is 50 feet. It will be cast in iron at Birmingham.

OBITUARY.

Julian A. Kebler, formerly president of the Colorado Fuel & Iron Co., was found dead at his home in Denver, Col., early Friday evening, Nov. 20. Death was probably due to a blood clot at the base of the brain. Mr. Kebler was born in Cincinnati, and at the time of his death was in his 45th year. His younger days were spent in Massachusetts and he graduated from the Massachusetts Institute of Technology in 1878 as a civil engineer. For a few years he followed his profession and was with the Chicago, Burlington & Quincy railroad. He then became identified with J. C. Osgood in the Whitebreast Fuel Co., at Ottumwa, Iowa, where important coal fields were developed. Fifteen years ago he went to Colorado, and with J. C. Osgood and A. C. Cass formed the Colorado Fuel Co. In July, 1892, the Colorado Fuel Co. and the Colorado Coal & Iron Co. were consolidated as the Colorado Fuel & Iron Co., and Mr. Kebler became second vice president and general manager. In 1901 he was made president. Last August he retired from the presidency because of ill health. During his administration of the affairs of the company it grew from a small beginning to its present proportions. Fifteen years ago Mr. Kebler married Miss Emma Abbott, of Westford, Mass. who survives him. He had done much for the State of Colorado and was beloved by his employes.

Andrew Wheeler, one of Philadelphia's well known business men, the treasurer of the American Iron and Steel Association since 1883, died suddenly of heart disease on Nov. 21. He had suffered from rheumatism, but had been able to attend to business up to the day before his death. He visited as usual, last Friday, the offices of Morris, Wheeler & Co., iron merchants, and his own office in the Wood building. He was born in Philadelphia Sept. 6, 1832. After attending the old academic department of the University of Pennsylvania, Andrew Wheeler entered the office of Morris, Jones & Co., iron merchants. He was admitted to a partnership in the business in 1860, when the firm name was changed to Morris, Wheeler & Co. His brother, Charles Wheeler, who had been a member of Morris, Tasker & Co., iron manufacturers, died in 1883, and two years later, when the latter company was incorporated, Andrew Wheeler became its president. He was also president of the Pottstown Iron Co., which has not been in active operation for the last 10 years. He was one of the directors of the Central National Bank from its beginning, and a director of the Delaware Insurance Co. Mr. Wheeler was long actively interested in the development of American shipping interests. He was a member of both the National and Philadelphia Boards of Trade, and in the latter served many years as chairman of the committee on foreign and coastwise commerce. He was one of the early members of the Union League Club.

John L. Jerome, formerly treasurer of the Colorado Fuel & Iron Co., was found dead in bed Nov. 22, at his summer home at Buffalo Park, 40 miles from Denver. Death was caused by an overdose of a drug, which he had been in a habit of taking to induce sleep, and was evidently accidental. Mr. Jerome was born at Fabins, N. Y., 49 years ago, and was identified with the Colorado Fuel & Iron Co. for a number of years. He was treasurer when he retired last July.

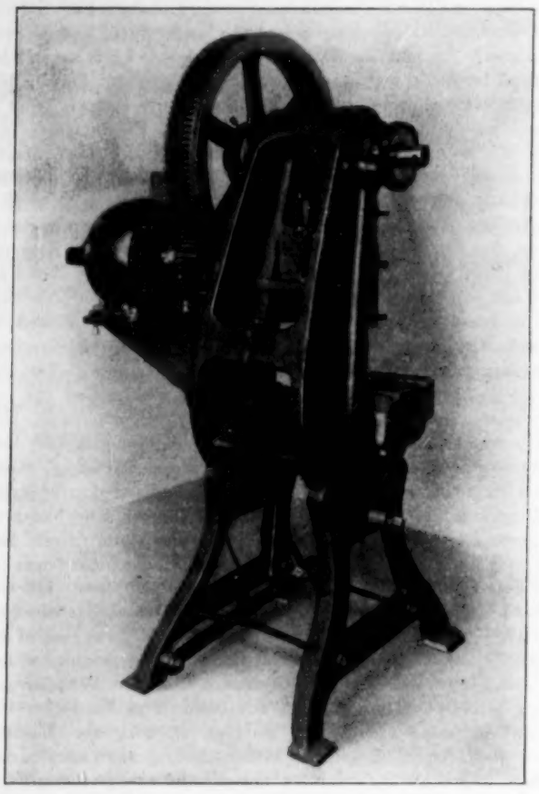
Gen. Francis Marion Drake, ex-Governor of Iowa, died Nov. 29 at Centerville, Ia., aged 73 years. General Drake was engaged in railroad and manufacturing interests, and was a large stockholder in the American Steel & Wire Co.

The directors of the Danville Bessemer Co., Danville, Pa., have recommended the dissolution of the company and the distribution of its assets among its stockholders. The stockholders will meet early in December to act upon the subject. The company was organized in 1899, with an original capital of $1,200,000, which in 1901 was reduced to $360,000. The plant has not been in operation for over a year.

Furnaces Nos. 1 and 3 of the Ohio plant of the Carnegie Steel Co., Youngstown, O., which have been banked for several weeks, will resume on Tuesday, Dec. 1. Stack No. 2, which has been relined, is ready to be blown in at any time, but no date has yet been fixed for doing so.

PRESS WITH "NORTHERN" MOTOR.

A press connected to a Northern spherical motor by direct gearing on the single reduction plan is shown in the illustration. These motors are multipolar with bar or coil wound armatures and the field frames are cast from a fine grade of soft steel. The frames are cast without joints of any kind and the castings are true to pattern. The pole pieces are seated and bolted to a ring on the interior of the motor field. The coils are assembled on the pole pieces to complete the magnetic circuit and are form wound. The discs of the armature core are compressed under hydraulic pressure. The commutator segments are of forged copper and the mica insulation has been selected to wear equally with the copper in order that the commutator will wear evenly and always present a true



NORTHERN MOTOR DIRECT GEARED TO PRESS.

running surface. These motors are built for application to a wide range of service and are manufactured by the Northern Electrical Mfg. Co., of Madison, Wis.

Republic Iron & Steel Co. Reports.

Various rumors affecting the Republic Iron & Steel Co., Chicago, have been published in the daily press within the past week or ten days, to all of which officials of the company enter an emphatic denial. In an interview with an official of the company in a position to know, *The Iron Trade Review* was advised that no negotiations are pending "that will in any wise affect the present status of the Republic Iron & Steel Co." This gentleman stated that the company was in an absolutely independent position, having its own sources of supply of raw material, and that its product did not enter into serious competition with that of the United States Steel Corporation; that the reports were made out of whole cloth and were issued and published for the interest of stock jobbing concerns.

H. F. Neumeyer, Macungie, Pa., announces that he has taken a partner and that the business has been reorganized as the Macungie Brass & Mfg. Co. The company is about to occupy its new factory where Mr. Neumeyer's line—the manufacture of nozzles, couplings, lawn sprinklers, ball cocks and closet valves—will be continued with increased capacity. A commodious foundry will also be occupied and the new company will be prepared to furnish all grades and weights of castings in copper, bronze and brass.

NEW RECORD AT EDGAR THOMSON WORKS.

In the month of October, the Edgar Thomson plant of the Carnegie Steel Co., Braddock, Pa., broke all previous production records. During this month the cupolas made 6,116 blows, producing 88,068 tons and 1,980 pounds of ingots, 76,519 tons and 2,180 pounds of blooms, 65,444 tons and 550 pounds of standard rails, and 5,000 tons and 810 pounds of light rails, a total of 70,444 tons and 1,360 pounds of rails. No. 1 rail mill produced 55,388 tons and No. 2 mill rolled 15,056 tons. On Oct. 22 the best previous record for blooms rolled in 24 hours was broken, 3,277 gross tons being rolled. On Oct. 29, the rail record was broken by the production of 2,939 tons of rails, and on Oct. 30 3,743 gross tons of ingots were produced. During this month the plant also produced 34 tons 1,190 pounds of forgings, and with the total output of the foundry the total finished product produced during October amounted to 76,032 tons and 114 pounds. The furnace department during this period produced 109,576 tons and 990 pounds of metal. The month's rail production is 1,400 tons above the best previous month's production, and is 3,000 tons above the average monthly production during 1902. The shipments of steel rails during this month aggregated 73,000 tons, or an increase of 3,000 tons over the best previous record. The South Chicago plant of the Illinois Steel Co. produced in October 67,000 tons of rails, which is 500 tons better than in any previous month. The Edgar Thomson plant will shut down during the holidays to permit the installation of a 12,000-h. p. engine to replace an engine put in 12 years ago. Other extensive repairs are also to be made.

Exports of Southern Pig Iron.

The deal for the exportation of 50,000 tons of pig iron from the Birmingham district, referred to recently in these columns, was not carried out because the railroads could not arrange for the $2 rate from Birmingham to Liverpool and Manchester via Pensacola. The best the railroads offered was $2.50 a ton. Beyond arrangements for the export of 1,500 tons by one producer, part gray forge and the balance No. 2 foundry, there was nothing done. Negotiations on several lots of 500 to 1,000 tons are reported under way.

The O. K. Machine Works have been organized at Buffalo, N. Y., to manufacture automobiles and accessories and have established works at 75 and 77 Ellicott street. J. W. Frey is president and general manager.

The plant of the Portsmouth Steel Co., Portsmouth, O., closed down Nov. 18 for an indefinite period. About 400 employes are thrown out of work.

The contract for structural material for the basement of the Rockefeller building, Cleveland, about 300 tons, has been awarded to the Bourne-Fuller Co., of that city, by the contractors, J. A. Reaugh & Son. The architects are Knox & Elliott.

Gottlieb Kolb, of Mannheim, Germany, has taken out a patent on a mixture of resin and other substances for the purpose of hardening and toughening of steel. The proportions of the ingredients are described as "substantially seven hundred grams of colophony, one hundred grams of copper vitriol, three hundred grams of prussiate of potash and one hundred grams of linseed oil, as set forth."

The American Steel Foundries has declared the regular quarterly dividend of 1½ per cent on its preferred stock, payable Dec. 1.

Application has been made to Judge Kirkpatrick of the United States court at Newark, N. J., for the second appointment of a receiver for the New York Shipbuilding Co. The application was made by the Mercantile Trust Co., New York, representing the holders of bonds of the company. It is asserted that there has been a default in the interest of these bonds.

The Labor Situation.

D. M. PARRY ON THE MEANING OF THE CLOSED SHOP.

In an address to the Citizens' Alliance, of Minneapolis, David M. Parry, president of the National Association of Manufacturers and of the new Citizens' Industrial Association of America, said in part:

"I take this cordial greeting you have extended as evidence not only of your hospitable intent but also of the deep interest you have in the organization formed by the recent Chicago convention. That convention was a most remarkable gathering. Three hundred business men, representing over 100 business men's and citizens' organizations covering the entire country, assembled together for the one purpose of uniting themselves into a force to combat trades-union lawlessness. It was a spectacle that in itself had a very salutary effect. The tone of the press if nothing else shows this to have been the case. It was a notification to the country that the business interests and good citizenship of the nation have had enough of organized labor foolishness. It was a notification that law and order must be enforced and that class domination over industry is not going to be tolerated. The organization that was formed, I believe, will become a power for good in this country. Everything cannot be accomplished in a day, but a good start has been made. It is up to you and to me and to every member of every association in sympathy with its aims and objects to make it a success.

"I want to say a few words here about the closed shop principle. The latest object lesson as to what this principle means is furnished by the strike of the employes of the Chicago City Railway Co. Let me read you the demands which were made upon the company and which were the occasion for the strike. The company agreed to submit all demands as to wages to arbitration, but the demands it refused to arbitrate are as follows:

"'That every employe of the company shall belong to the union and that every non-union employe of the company either be compelled to join the union or be discharged.

"'That the employes of the company have the right to control what is known as the "routing" of cars, which includes the assignment of men and the selection of the working hours.

"'That no employe of the company be discharged from its service without the consent of the officers of the union, who are to be judges of the conduct of the employes of the company.'

"These demands are, in effect, that the company turn its business over to the union bosses. The only right which the company would retain would be that of furnishing the brains and paying the wages of the men. In order to compel the company to yield to their commands the labor bosses have filled the half of Chicago with mobs. * * * It is not the right to quit work or the right to organize for which they are striving. No one denies them these rights. But the right which they are fighting for and the one which all decent citizens must oppose to the last of their strength is that to prevent other people besides themselves from working. This is the meaning of the closed shop principle."

CITIZENS' INDUSTRIAL ASSOCIATION ORGANIZED FOR WORK.

At the recent Chicago convention at which was formed the Citizens' Industrial Association of America, an executive committee of 15 was created, five members of which are the officers of the association, the remaining ten to be appointed by the president. Announcement of the appointment of these ten has just been made by President D. M. Parry, of Indianapolis, so that the full committee is as follows:

David M. Parry, Indianapolis, president of the association; J. C. Craig, Denver, first vice president, president of the Colorado State Citizens' Alliance; F. M. McCleary, Detroit, second vice president, president of the National Electrical Contractors' Association; James G. Hoile, Brooklyn, third vice president, secretary of the Manufacturers' Association of New York; Maj. A. C. Rosencranz, Evansville, Ind., treasurer, president of the Citizens' Alliance of Evansville; John Kirby, Jr., Dayton, O., president of the Dayton Employers' Association; J. W. Vancleave, St. Louis, member of the executive committee of the National Association of Manufacturers; Frederick W. Job, Chicago, secretary of the Chicago Employers' Association; E. F. DuBrul, Cincinnati, commissioner of the National Metal Trades Association; Philip R. Toll, Kansas City, Mo., president of the Kansas City Employers' Association; C. W. Post, Battle Creek, Mich., president of the Association of American Advertisers; Charles H. Merritt, Dansbury, Conn., chairman executive committee American Anti-Boycott Association; N. F. Thompson, Birmingham, Ala., secretary of the Birmingham Citizens' Alliance; J. H. Record, Minneapolis, of the Minneapolis Citizens' Alliance; W. C. Shepherd, Wilkes-Barre, Pa., president of the Employers' Association of Wilkes-Barre, also representing the Citizens' Alliance of that city.

A meeting of the committee will be held shortly at Dayton, O., and plans laid for prosecuting the work of the association. A. C. Marshall, of Dayton, has been proposed for secretary of the association. The movement, which has for its chief aim organized opposition to unlawful acts of trades unions, has been growing in favor and is expected to do an important work in defense of the rights of the individual workman.

DOMINION STEEL CO. CUTS WAGES.

The Dominion Iron and Steel Co. at Sydney has given notice of a general reduction in the wages and salaries of all its employes. The notices posted to that effect read as follows:

"Beginning with Dec. 1, 1903, all wages and salaries of the employes of the Dominion Iron and Steel Co. will be reduced from 10 to 33 1-3 percent. Common laborers will be paid $1.26 per diem."

The bulletins issued to the machinists notify them of a reduction of 15 percent, and to furnace men 20 percent. The reduction will affect every man on the plant, from officials to laborers. John Moffat, grand secretary of the Provincial Workingmen's Association, with which the large majority of the employes of the works are connected, said that the association will not submit kindly to this cut in wages. The matter will at once be discussed at a joint meeting of the lodges directly concerned, and then referred to the grand council, whose decision will be final. It is understood that the association will call out men on Dec. 1. The management avers it was the only course for it to pursue, in view of the falling market and the company's inability to compete in Canadian territory with the United States Steel Corporation.

LABOR NOTES.

The management of the Terre Haute (Ind.) branch of the American Car & Foundry Co., which employs 900 men, is in a controversy with the car builders' union of that city, and only the blacksmith department is at work. A few days ago the company refused employment to a dozen men because they were considered trouble makers. One hundred other men quit work in the erecting department, and have been out since. Manager Cox declares his unalterable purpose to let the men stay out indefinitely rather than submit to their dictation.

About 60 men formerly employed by the Illinois Steel Co., at South Chicago, started a few days ago for their former homes in Europe. The men were among the 3,000 employes recently laid off for an indefinite period by the company. They are accompanied on their homeward trip by their families.

A considerable number of the employes of the Colorado Fuel & Iron Co., recently laid off, have gone to work in the mines at Colorado, taking the places of strikers.

The differences between the structural iron workers employed in rebuilding the Grand Island bridge at St. Louis, and the American Bridge Co., have been settled and the men have returned to work.

The New Castle Foundry Co., New Castle, Ind., which closed down in the spring on account of the strike, is securing men and making arrangements to start up again as soon as possible.

A number of arrests have been made at Birmingham, Ala., for offenses defined by the anti-boycott law, the men arrested being charged with using unlawful means to embarrass the

Alabama Steel & Wire Co. in its mining operations. The labor unions have taken up the fight, and threaten to test the constitutionality of the law.

In the strike of the structural iron workers at the Brown-Ketcham Works, Terre Haute, Ind., referred to last week, it has developed that the men struck on account of orders from the national organization, and not because they had any grievances. The company had a contract with the men in which they agreed not to go on a sympathetic strike. As a penalty for violating their contract, the men have lost their jobs. The company obtained other workmen without difficulty.

The strike at the plant of the Indianapolis Foundry Co., Indianapolis, Ind., is still on. One hundred and forty iron molders are affected. The men walked out because of the refusal of the company to grant their demand for a closed shop. Since the molders have quit work, the company has been operating with half the force, using nonunion men.

The Rarig Mfg. Co., Columbus, O., has declared its plant an open shop. The union started a strike at the plant about two years ago, and union men have not worked there until a few days ago.

Labor organizations connected with the metal trades in Chicago have organized a central labor body which will be known as the Metal Trades Council. Its purpose will be to enable the various unions represented in its membership to act in harmony in securing terms and contracts from manufacturers who have in their employ men engaged in the different crafts. At the first meeting, held last Sunday, the following eleven trades unions were represented: United Metal Workers, International Association of Machinists, brass workers, blacksmiths, iron molders, boilermakers, metal polishers, pattern makers, brass molders, chandelier makers and blacksmiths' helpers. Temporary officers were elected and a committee appointed to draft a constitution for the permanent organization.

At the foundry of the Ohio Cultivator Co., Bellevue, O., non-union men have been at work for some weeks because of a strike resulting from a demand by the Iron Molders' Union that none but union men be employed. Two of the workers were set upon by a crowd of men as they left the shop on Nov. 23 and badly beaten. Injunctions were at once obtained against the strikers, restraining them from "in any way harassing or interfering with plaintiff or its said business or property, and from harassing, threatening, assaulting, or threatening to assault those persons trying to enter the employ of plaintiff, or who are now in the employ of plaintiff, or from assaulting them or inducing others to attempt to do so," or from trespassing upon the company's grounds for the purpose of doing the above acts. A special grand jury has been called to take action in view of the assault.

Machinists and the Inland Steel Co., at Indiana Harbor, have reached an agreement and the men have returned to work. The agreement provides for a 9-hour day for machinists, pay at the rate of 33⅓ cents an hour, or $3 a day for nine hours' work.

LaBelle Iron Works, Steubenville, O., have sent their employes notices of a wage equalization and reduction in order to be able to maintain their competitive position in the iron market.

The Badger State Machine Co., Janesville, Wis., has been reorganized and the company incorporated with a capital stock of $10,000. The president is George W. Marsden; vice president, Harry Whittemore; secretary and treasurer, H. O. Nowlan. These gentlemen, with George B. Slater, comprise the board of directors. The company has largely increased its shop facilities by the purchase of new tools and the addition of more space, and it is the intention to build a foundry in the spring. The company manufactures a line of punches and shears to which it has given the name "New Badger."

The erection of the new plant of the National Tube Co. at Lorain, O., is progressing rapidly, a number of the buildings already being under roof. The two blast furnaces are well under way, and one of them can be blown in during January. The finishing departments will not be completed until the summer of 1904. The standard gauge works railway when completed will consist of 65 miles of single track, of which 45 miles has already been laid. This system will be the most extensive at any steel plant in the world.

The Metal Market.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, NO. 150 NASSAU ST., Nov. 24.

Pig Tin.—Dullness continues to be the chief characteristic of the market, and prices are about the same as when we last quoted them. The firm undertone noticeable is a surprise, since the demand is very slack. No activity is looked for in the near future. The London situation has been without particular interest, and prices have been easier. Today's closings at the Metal Exchange were as follows: Spot to December, 25¼c to 25½c. London closed today as follows: Spot, £116; futures, £117 5s. Arrivals at Atlantic ports for the month to date, aggregate 1,822 tons, with 930 tons afloat.

Copper.—Outside of still further reductions in the official prices, amounting to ⅜c in Lake, and ¼c in both electrolytic and casting, the situation is as we last described it. The market has lapsed into lethargy, from which no early awakening is expected. Buyers have everything their own way, but are only providing for immediate necessities. The London market has been dull, with prices declining in sympathy with those here. The one redeeming feature of the month so far, has been the increased exports. Today's closings at the Metal Exchange were as follows: Lake, 12¾c to 13c; electrolytic, 12⅝c to 12⅞c; casting, 12½c to 12¾c. London's closings today follow: Spot, £54 15s; futures, £54 12s 6d. Exports for the month to date amount to 10,214 tons, against 8,215 tons for the same period last year.

Lead.—Spot is selling at 4.25c, but 30-day shipments of 50-ton lots can be had for 4.10c. St. Louis and London are both weaker at 4c sellers, and £11, respectively.

Spelter.—Spot is lower and scarcer at 5⅝c nominal, with December offering at 5c. St. Louis is firm at 4¾c. London slightly weaker at £20 12s 6d.

Antimony.—Cookson's is 7¼c, Hallett's 6¼c, and outside brands 5¾c.

Quicksilver.—Is quoted at $46.50 to $47.50 per flask of 76½ pounds in lots of 100 flasks. London is £8 7s 6d.

Nickel.—Is selling at 40c to 47c for large lots down to a ton, and 50c and 60c for smaller quantities.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1115 MONADNOCK BLOCK Nvo. 24.

There is no life to the metal market, and prices are drifting slowly to lower levels. Melters are purchasing only in small lots, and the indications point to a continuance of this sort of demand until the holiday season is over. Copper and pig lead are fractionally lower than a week ago. We have revised our prices and quote, Chicago delivery: Lake copper, carload lots, 13c; smaller quantities, 13¼c; casting, 13c to 13¼c. Pig tin, carload lots, 26c; lesser lots, 27c. Pig lead, 4.10c in 50 to 100-ton lots, and 4.35c to 4.50c in smaller quantities; sheet zinc, 6.75c; antimony, 7¼c to 7¾c, for both Cookson's and Hallett's.

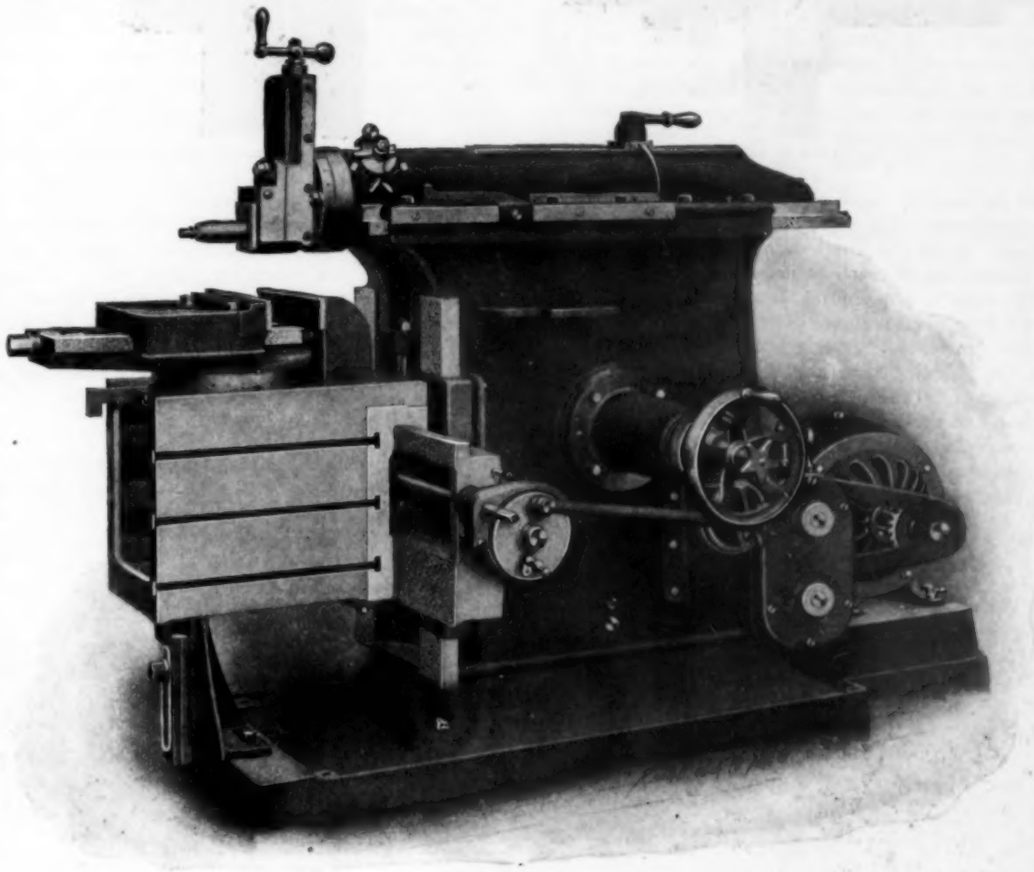
Old metals continue in fair demand without change as to price. We quote dealers' selling prices as follows: Copper wire, $11.50 to $11.75; heavy copper, $11.25 to $11.50; light copper, $10.50 to $10.75; red brass, $10 to $10.25; red brass turnings, $8.50 to $8.75; yellow brass, $7.50 to $7.75; yellow brass turnings, $6.50 to $6.75; lead, $3.90; zinc, $4.25; pewter, $17.

The Fisher Governor Co., Marshalltown, Pa., manufacturer of steam pump governors, etc., informs us that its trade for the month of October was 30 percent greater than during the same month in the year previous, many of its orders coming from dealers who have handled its goods for ten years and more. The company does not contemplate the erection of any new buildings, but expects to be in the market the first of the year for an additional lathe.

28-INCH MOTOR DRIVEN SHAPER.

The 28-inch shaper built by the American Tool Works Co., of Cincinnati, and illustrated herewith, is motor driven through a speed box. The motor employed may be of any type, constant or variable speed, single or multiple voltage. It is mounted on a substantial extension to the base, at the rear of the machine, and may be readily connected to the speed variator by gear or silent chain. The American speed variator taking the place of the cone pulley, is of simple and powerful construction, requiring but six gears for the mechanical changes in speed. These speed changes are obtained while the shaper is in full operation, by an improved clutch mechanism, the levers being conveniently located. The number of speeds thus obtained is of course doubled by means of the back gears. The whole is encased in a box, with provision for lubrication and for easy access to working parts. The necessary adjustment for any desired speed can be determined by reference to a convenient index on the gear box.

This machine is also suited to a belt drive from countershaft, through a single pulley mounted on an extension of the upper shaft in the gear box, and the flexibility of this construction renders it a simple matter to convert a machine installed as a belt driven shaper into a motor driven shaper at any future time.



A NEW SHAPER.

The stroke of the ram is positive and its length may be changed without stopping the machine. The rocker arm is pivoted near the base line, giving the ram an almost uniform rate of speed for the entire stroke, and providing very quick return. The cross feed is variable and automatic, with wide range of feeds, and readily adjusts itself to any elevation of the rail. Reverse of feeds is easily accomplished, without stopping the machine. This shaper is designed for continuous hard service at fast speeds and heavy feeds.

The United States court at Jersey City has issued an order continuing the appointment of Robert A. Jennings, of Jersey City, as receiver of the Carpenter Steel Co., whose plant is at Reading, Pa. The complainant, Richard P. Lydon, of New York, alleges that the business of the steel company has been conducted at a loss of $200,000 in the last year. Mr. Jennings was appointed temporary receiver on Nov. 7. Lydon declares that all the working capital has been spent in enlarging the plant, so that at present, excluding material and supplies, only $90,000 is available in assets outside of contracts still pending. These contracts, which are for projectiles for the United States Government, amount to $270,000, and will show a profit of $70,000, it is asserted, if the work is allowed to proceed without interruption.

British Iron Exports Decline.

The Weekly Market Report, showing the shipments of pig iron from Middlesborough (coastwise and foreign) gives the exports to America for the nine months ended Sept. 30, 1903, at 76,460 tons, against 103,878 tons for the same months of the preceding year, 3,500 tons for 1901, and nothing for 1899 and 1900. The total exports to foreign and coastwise ports during the nine months ended Sept. 30, 1903, were: Foreign, 396,581 tons; costwise shipments, 522,696 tons; total for the nine months, 919,277 tons. In transmitting the Weekly Market Report, United States Consul General Evans, London, calls attention to the fact that there were exported from Middlesborough to America in September, 1902, 29,196 tons of pig iron, while there were no shipments in September, 1903. The shipments for the 9 months of 1903, in periods of 3 months, were as follows: January-March, 51,160 tons; April-June, 23,800 tons; July-September, 1,500 tons—showing a steady decrease as the year advanced.

The creditors of the Milwaukee Rice Machinery Co., Milwaukee, Wis., have appointed E. R. Kenyon, S. S. Bliss, of Chicago, and Wheeler Bloodgood, of Milwaukee, as committee to take charge of the business of the company and arrange for its reorganization. The company has a foundry and shops at 237 Oregon street, Milwaukee. Assets are $72,507 and the liabilities $62,223. The company manufactures mechanical apparatus, electrical machinery, belting, gas fixtures, etc.

IMPROVED DISC CLUTCH.

A disc clutch just put on the market by Lemley & Schultz, of Chicago, is an improvement on their earlier patents. Fig. 1 shows a coupling while Fig. 2 is a pulley—both partly in section. The inside friction plate is bolted to a sleeve E and on this can be placed a pulley, gear, sheave or sprocket wheel. The driving shaft is keyed to the clutch at space A; the driven shaft is keyed at space C. The hub which is keyed to the driving shaft has a bushing at B; this receives the end of the driven shaft and maintains the shafts in line with each other. There is a follower plate between the inside friction plate and the outside toggle plate. This is operated by the toggle arrangement. The toggles are made of steel and are very strong. While the strain is on the toggles the levers are in a straight line or nearly so, and while in this position the toggles are equal to any probable strain. The manner of adjustment is simple and positive. The adjustment is controlled by common cap screws. After the clutch has been properly adjusted, the adjusting screws are locked or held in position by a check screw. The friction surface is made of hard maple blocks riveted to the inside friction plate. The clutch is neat in appearance and, owing to the design of the outer plates, is very strong.

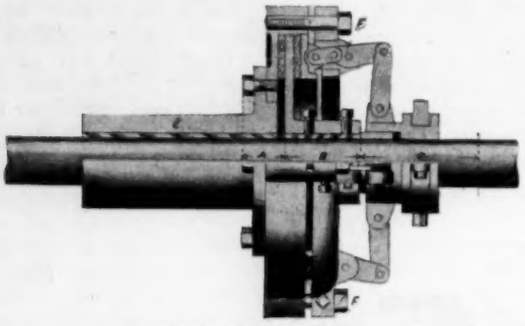


FIG. 1.—STYLE A CLUTCH.

These clutches are made in two styles—A and B. Style A is used on a driven shaft and B on a driving shaft. The object is to have the mechanism of the clutch stationary while the clutch is out of gear so the clutch can be adjusted without shutting off the power.

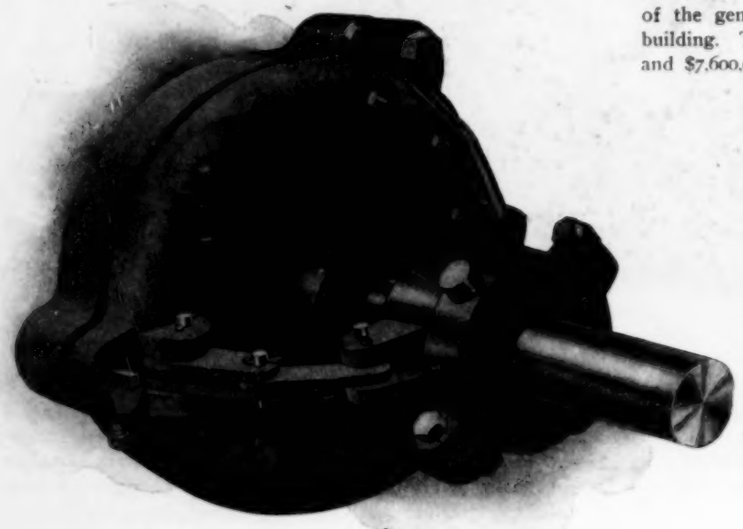


FIG. 3.—STYLE A CLUTCH.

A full view of style A clutch is illustrated in Fig. 3, and Fig. 4 shows the style B clutch attached to a gear wheel. The principal improvement in the new design is in the manner of adjustment. The adjustment on the old clutch was expensive and weak compared to the later improvement. In order to make the adjustment on the old style, it was necessary to operate a lock-nut on the back of the clutch, which was an objection where the clutch was used in connection with a pulley, as the arms of the pulley prevented the adjustment being made while the shaft was in operation. On the new design, the adjustment is made from the face of the clutch and can be adjusted while the shaft is in operation without danger. Again, the adjusting screw is a standard cap screw and stronger than the special adjusting screw on the old style. It is subject to no side strain, and owing to the improved design on the new clutch the toggles are of wrought steel in place of the cast steel toggles necessary on the old style. Another improvement in the latest clutch is the shape of the outside plates, which gives a much neater appearance and adds considerably to the strength. The strain applied by the toggle is between the shaft and the adjustment.

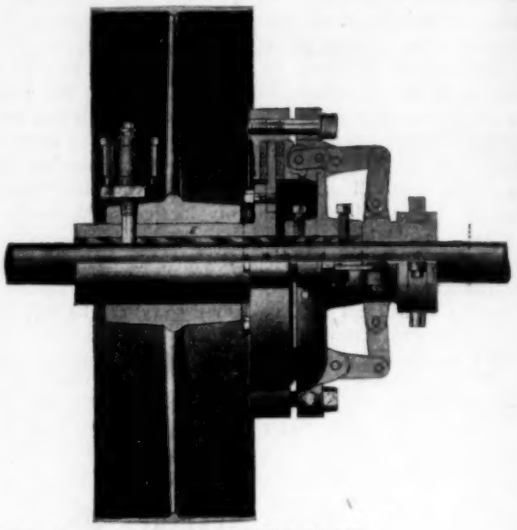


FIG. 2.—STYLE B CLUTCH.

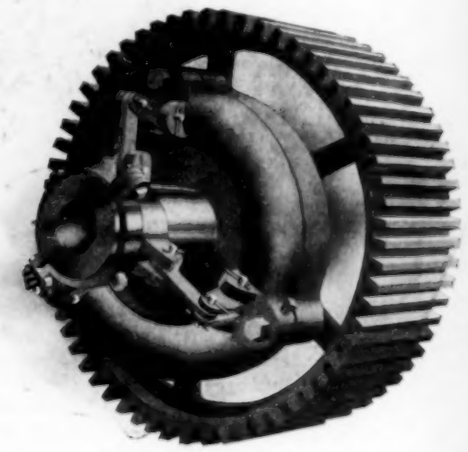


FIG. 4.—STYLE B CLUTCH.

President Brown, of the American Shipbuilding Co., has announced that the dividend on the common stock will be discontinued. He states that the course is justified on account of the general depression in business, particularly in shipbuilding. The common stock issue authorized is $15,000,000 and $7,600,000 is outstanding. The company has no bonded indebtedness and has accumulated a surplus amounting to about $3,500,000. Of this sum about $600,000 has been added during the year just concluded. At the present time the preferred stock to the amount of $7,900,000 is drawing 7 percent annually.

The American Seeding Machine Co., with headquarters at Springfield, O., will soon put into effect plans to reduce expenses, following a policy similar to that recently announced by the International Harvester Co. Numerous agencies will be consolidated and some employes dismissed. The company does a large part of the grain drill business of the country.

THE CAMBRIA STEEL CO'S HOSPITAL.

In connection with articles on "First Aid to the Injured in Industrial Establishments" which have appeared in *The Iron Trade Review* from time to time, some reference has been made to the hospital work at steel works and other operations employing large numbers of men. What has been done by the Cambria Iron Co. and later the Cambria Steel Co. at their Johnstown, Pa., works is described in a paper read by W. B. Lowman, M. D., of Johnstown, before the Medical Society of the State of Pennsylvania. We quote from the paper below, reprinting also the statistics showing the number and character of injuries in the various departments of the Cambria works in the 16 years the company's hospital has been maintained:

"From the establishment of the Cambria Iron Co. in 1852 up to 1887, the men in their employ who were so unfortunate as to be injured were from necessity compelled to have their injuries treated at their homes. Under these conditions the surgeon had many embarrassments and complications to contend with in the care, treatment and operation which he was required to perform. No conveniences or suitable place to perform the simplest operation, no trained nurse to carry out your instructions; in fact, all sorts of complications handicapped the surgeon. Nothing aseptic, but exerything in the surrounding atmosphere septic; not even a clean bandage or dressing to apply to a wound or a recent operation. No prepared ligatures, no absorbent cotton, lint or gauze—in fact, at this period no such dressings could be bought, but all had to be prepared by the surgeon himself, as the emergency required; no questions were asked as to the sterility of any dressing. These are but a few of the inconveniences and embarrassments that the surgeon was compelled to contend with previous to the establishing of an emergency hospital, and the introduction of antiseptics and the aseptic method These were the times, when there was an emergency, that the young physician or surgeon was compelled to apply his ingenuity to the circumstances which surrounded him.

"In 1887, after many entreaties with the officials and management of the Cambria Iron Co., I succeeded in getting them interested in this humanitarian work of caring for their unfortunate injured employes. At this period there were fewer men employed than at the present time, but the amount of machinery to the number employed was proportionately as great, and where there is so much machinery in motion, and so many men employed, there must necessarily be numerous accidents.

"In November, 1887, the Cambria hospital, with a bed capacity of twelve, and a dispensary service for the ambulant case, was opened. The location of the hospital is within sight of the Cambria works and easy of access—reached by ambulance in less than ten minutes, so that little time is consumed in conveying the injured to the hospital from the mines or works. In order that you may appreciate the popularity of this institution with the employes of this company, you can readily understand by reference to our record: The first fiscal year of the hospital, there were admitted for treatment as in-patients, 32; and ambulant cases treated at dispensary, 363, or a total of 395 the first fiscal year. The last fiscal year of 1902, there were admitted as in-patients, 604, and treated at dispensary, 3,104, or a total of 3,708. treated. Number of dressings applied last fiscal year, 28,003. From these figures you might conclude that there was an unusual number injured at the Cambria Steel Co.'s works, but I have been informed, by surgeons employed in similiar work, that we have less injured in proportion to the number of men employed.

"The supervision of this hospital, the care and treatment of the injured, is under the direct control of one surgeon and an assistant, who are salaried by the Cambria Steel Co. A superintendent, six nurses and two orderlies attend to the detail work of the hospital. The average cost per patient per day has been, on an average, 85 cents. At this small cost it certainly would be no burden on any of the large industrial establishments of the country, to establish and maintain similar hospitals. I believe the Cambria Iron Co. was the first corporation in Pensylvania, if not in the United States, to establish and maintain what I have termed 'industrial hospitals. From year to year the necessity for such a hospital has been manifestly proven, and it is a good investment, not only from the humanitarian standpoint but from a financial standpoint, and they both pay. Each year the hospital is more popular and more appreciated by the employes of this company. From a small beginning of 12 beds, when there were between 3,000 and 4,000 men employed, this institution has increased to a bed capacity of 40, there being, at the present time, 13,000 men employed. How many similar industrial establishments maintain a hospital of this capacity, and have the welfare of their employes at heart? It has been said that the modern hospital is a tower of strength. It constitutes a bond of union which knits all classes together and humanizes the whole nation.

"The point which I wish to emphasize is the importance and necessity of what I have termed 'industrial hospitals.' An effort should be made by the employes of all large industrial works to interest the management to establish and maintain similiar institutions to the Cambria hospital. The good will of the employes, the amount of suffering alleviated, the good results of up-to-date treatment, all pay, as I have said, from a humanitarian standpoint as well as a financial standpoint.

"As a matter of statistics, which I know are tiresome, I append a summary of surgical work done at this hospital for the Cambria Steel Works, from the date of its opening in 1887 to the present time, covering a period of 16 years. Without going into detail I might state that the number of cases treated during this period was 24,708."

ACCIDENTS BY DEPARTMENTS.

	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
Rolling Mills	78	110	105	95	189	127	137	105	200	256	308	371	361	378	399	326
Steel Works—Converting dept	132	104	58	126	160	102	96	84	133	115	83	141	254	185	190	282
Steel Works—Open Hearth	19	21	9	23	48	22	11	8	26	67	29	53	65	23	74	233
Rolling Mills	.....	.....	10	15	33	21	16	12	32	39	35	71	101	64	56	77
Blast Furnaces	78	119	99	89	194	123	120	93	240	240	241	418	589	414	437	431
Laborers	100	138	49	112	147	102	79	75	82	128	86	176	389	484	430	285
Railroads	50	39	44	58	99	88	73	52	77	66	54	73	216	129	281	289
Machine Shops	23	21	23	21	32	25	40	35	24	50	50	56	100	86	124	172
Axle Plants	8	15	4	8	19	14	19	14	16	14	7	18	47	33	51	66
Foundry	23	18	5	15	30	12	9	8	13	24	14	44	35	50	42	64
Roof Shops	4	9	9	9	19	8	7	5	11	5	6	18	13	23	13	12
Roll "	.....	1	.....	.....	3	2	2	2	2	13	10	9	6	17	25	10
Boiler "	10	3	3	3	5	2	2	2	5	9	14	22	16	18	26	20
Bolt Mills	.....	1	1	3	5	4	1	1	2	3	2	1	10	1	3	2
Rod "	12	25	9	12	16	12	1	2	1	1	3	4	5	4	.....	.....
Blacksmith Shops	5	16	4	9	16	4	6	6	6	19	11	1	19	30	25	21
Pattern "	2	3	2	3	.....	2	1	4	3	3	1	2	2	3	4	3
Carpenter "	4	3	9	6	22	8	9	9	18	12	1	10	17	21	32	39
Brick Masons	4	2	6	7	10	8	8	5	18	26	18	56	48	78	98	51
Stone "	11	3	3	6	8	5	3	5	4	3	3	15	5	17	30	17
Mine "	8	15	10	8	47	67	70	61	46	69	62	108	148	145	174	185
Coke Plants	.....	.....	.....	.....	.....	.....	.....	.....	7	17	15	9	29	32	39	39
Beam Yard & Structural Dept	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	44	122	122	246	319
Tar Paper Plant	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	10	.....	12
Erecting Department	.....	.....	.....	.....	.....	.....	.....	12	20	21	13	49	33	35	20	12
Electric Light Department	.....	.....	.....	1	3	5	7	6	7	4	1	6	4	2	15	13
Plumbing Shops	.....	.....	2	2	.....	.....	.....	.....	19	.....	2	.....	2	2	7	.....
Stables	.....	4	1	3	9	4	4	1	10	2	2	4	3	11	4	11
Gautier Departm't Steel Works	66	96	39	58	60	57	60	51	88	111	153	244	315	191	256	349
Total	727	764	504	692	1,174	824	797	658	1,091	1,317	1,256	2,052	2,986	2,598	3,000	3,646

Summary of Character of Accidents.

Wounds	9,636
Contusions and bruises	5,636
Sprains	1,951

Burns	2,289
Injury to eyes, wounds, etc.	1,018
Foreign body in eyes	1,588
Enucleation of eyes	24
Ligation of arteries	34
Rupture of tendons	103
Necrosis of leg, following injury	26
Necrosis of arm, following injury	27
Abscess	250
Concussion of brain	70
Concussion of spine	16
Strangulated hernia	12
Overcome by gas fumes	113
Overcome by gas—mine	40
Overcome by heat	27
Ulcers, varicose	61
Resection of arm	5
Amputation of thigh	25
Amputation of leg	44
Amputation of foot	23
Amputation of toes	88
Amputation of arm	22
Amputation of forearm	15
Amputation of fingers	388
Fracture of thigh—simple	49
Fracture of thigh—compound	8
Fracture of leg—simple	129
Fracture of leg—compound	93
Fracture of foot	15
Fracture of toes	101
Fracture of forearm—simple	93
Fracture of forearm—compound	18
Fracture of arm	32
Fracture of fingers	70
Fracture of ribs	64
Fracture of collar bone	52
Fracture of jaw, lower	17
Fracture of nose	21
Fracture of skull	65
Fracture of spine	24
Fracture of knee cap	5
Fracture of shoulder blade	3
Fracture of sternum	4
Fracture of pelvis	1
Dislocation of thigh	6
Dislocation of knee	3
Dislocation of shoulder	22
Dislocation of elbow	6
Dislocation of ankle	10
Dislocation of fingers	20
Dislocation of wrist	3
Dislocation of jaw	2
Dislocation of collar bone	1
Dislocation of spine	1
General debility, etc.	61
Died from injuries	178
Total	24,708

DR. GOLDSCHMIDT ON ALUMINO-THERMICS.

Dr. Hans Goldschmidt, of Essen, Germany, delivered an illustrated lecture on "Alumino-Thermics," at Columbia University, New York, Nov. 13. The inventor said that fifty years ago the reducing properties of aluminum had been tried but that without exception the experimenters heated their compounds externally and the reaction was so violent that they could only operate with very small quantities. The result with but one exception was an aluminum alloy, not a pure metal. This exception was the production by Profs. Green and Wahl of pure manganese by means of aluminum from a manganese oxide. Prof. Green, however, heated the contents of his crucible from without. A chemical combination of oxygen and aluminum in the manner developed by the lecturer created a temperature about equal to that of the electric arc light. The atmospheric oxygen is not taken but the solid oxygen contained in the oxides are mixed with finely pulverized aluminum and the resulting mixture is the heat producer and is called thermit. Dr. Goldschmidt performed many experiments and exhibited a number of lantern slides. Below we give extracts from his address, together with a synopsis of other portions:

"Among the pure metals produced by the alumino genetic reaction I may mention chromium free of carbon, as having already found a market. It is used in the manufacture of particular qualities of chromium steel with a limited percentage of carbon. For instance, it is considerably used for self-hardening tool steel with five to six percent chromium, about twice that quantity of tungsten and only 0.6-0.7 carbon. Pure manganese produced by this process finds employment in copper and nickel manufacture and in the production of particular sorts of manganese steel of great strength and great elasticity with 12 to 14 percent manganese. Pure molybdenum and ferro vanadium have also lately been put on the market. Ferro titanium has been in use with a number of steel works for quite a considerable time. A number of metals or alloys are also produced, among which are ferro boron, manganese-boron, lead barium, although their value for practical purposes is limited at present. The experiments with boron are not yet concluded."

The city of Leeds, in England, after careful investigation by a committee of experts, is using the thermit welding process over the whole of its track. Last year 3,000 joints were welded, and this year no less than 20,000 joints have been delivered. There is an absence of bulky equipment; all that is required is a crucible, a mold-box, and in some instances, where a complete butt-weld of the head of the rail is desired, a rail-clamp. All these materials, including the necessary quantity of thermit, can easily be moved on a hand truck. Each weld, according to section, requires from 15 to 20 pounds of thermit. The mold is made according to a model designed specially for each section. Its two parts, one on each side, firmly enclose and exactly fit the rail. Certain channels are provided in the mold parts for the thermit iron to run through. The size of these channels, which are open towards the rail, has been accurately determined by experiments. It varies according to whether slag or iron is to fill the mold and also in accordance with the requirements of each section. The thermit iron running out of the crucible flows round the web and foot of the rail and, melting them, forms one mass with them. The liquid slag which follows the metal is diverted to the top of the rail and brings the latter to welding heat. The whole section is thus heated equally and the rail ends will not buckle. The weld can be made with or without rail clamps. In the former case the rail ends are butted together by tightening the screw two or three minutes after the run. A slight and very short upset will be produced at the joint, which can easily be removed. The simplest way has been found to chisel it off; a grinder does not answer the purpose equally well. One man can even out 25 joints in a day in this manner. By using the rail clamps a perfect butt weld, without even the smallest slit, is obtained. The rigidity of the joint is particularly great. Under hydraulic pressure the break occurs outside the welded zone, as with the iron shoe welded on to the section the joint is really stronger than the rail.

The use of clamps is based chiefly on theoretical considerations. Even a butt-weld can be obtained without clamps, particularly with rails already embedded. At Barmen, Germany, such work was done very successfully about a year and a half ago. The old fishplates were taken off, the ends of the rails were raised slightly by means of a crowbar and a shim firmly wedged in between; in this case the shim is welded into the head of the rail. When welding new rails not yet embedded the use of rail clamps can be obviated by firmly wedging up the rail from the next succeeding joint. Working without clamps the time consumed per joint equals three-quarters of an hour for one man; trained squads of four men, including foreman, did not use nearly so much time. At $1.50 per day the wages item of cost is 10 cents per joint. The use of the clamps doubles this amount. All other labor connected with welding remains the same whether clamps are used or not.

To come back to the molds. They are made in two parts, and can either be made on a large scale by manufacturers of refractory earthenware, or according to momentary requirements by the trolley lines in their own shops. In the latter case they are made by ramming an ordinary mixture of sand and loam into a sheet-iron case, which afterward has to be dried during a couple of hours at a temperature of some 100 degrees C. The cost of the mold is, therefore, only a few cents.

The mold, in a good, dry and porous condition, is screwed on to the rail and the rims touching the rail are carefully smeared with clay. Before doing so, however, the rail ends are cleaned of dirt and rust with a wire brush and slightly warmed; a sand blast is superfluous. In case the tops of the rails are to be butt-welded the section has to be filed. This is all that is required in the way of preparatory work. A true alignment of the rail is, of course, an indispensable precaution The rails require no screw holes as no provisional fishplates are necessary.

It will be seen that none of this work demands special training, and that the trolley companies' men here as in Europe will be easily able to do it. A certain supervision to see that it is done carefully is a matter of course. In case of wet weather the protection of a few planks is desirable to prevent the mold and thermit getting wet.

"One of my associates, Mr. Mathesius, has specially devoted himself to studies concerning the improvement of iron and steel castings. These are obtained by introducing the thermit below the surface of the bath, and so producing a high temperature in one place. A box containing the thermit is fastened to an iron rod and held down on the bottom of the ladle. For cast iron and in some cases for steel a special thermit is used which gives off an alloy of iron with titanium so that the titanium enters the liquid metal. The reaction takes place all through the contents of the ladle and thoroughly stirs them up in the space of a minute or two. Gases and particles of slag are driven upwards so that the fluidity of the iron is increased. An increase of the temperature does not in reality take place, as the proportion of added thermit is only ¼ to 1-16 percent of the total contents of the ladle. The effect of the titanium is to bind small quantities of nitrogen, to increase the fluidity of the cast iron, and to produce a finer grain.

"Another application of the so-called 'box-reaction' is important for steel castings, and especially for casting large steel ingots, to prevent the familiar phenomenon of piping. In the heads of such blocks hollow spaces are found which mostly cause 30 to 40 percent of loss.

"The thermit process as used for this purpose consists in introducing a box of so-called anti-piping thermit into a block with the aid of an iron rod, in exactly the same way as described before. According to the size of the block the box is suspended about three feet. The reaction is completed in this case in a few seconds. The box is introduced, of course, only after the piping has been formed. The head layer, which has already become solid, is broken through for this purpose. Immediately after the reaction is completed, steel, which is held in readiness for this purpose, is poured into the open hole. The method is really very simple, and one learns very quickly at which time to introduce the box. Moreover, the method is very cheap, only about 10 pounds of thermit being required for blocks of 10 to 20 tons weight. After the treatment relatively very small flaws were found, and only in the upper part of the block, so that the loss is only a very few percent.

"The method has also been applied for very large steel castings to revive steel which had become plastic in the runners. In this the anti-piping thermit is placed at the bottom of some risers, in an annular box with concentric walls, containing about 2½ pounds of thermit. There is, in this case, no need to thrust the box in by means of an iron rod. The piping will not protrude into the piece, but will be kept right at the head of the riser."

A special meeting of the stockholders of the Colorado Fuel and Iron Co. will be held in Denver Dec. 15, 1903, to revise the indenture of the debentures so as to permit an issue of notes, also to present to stockholders a statement of transactions by which the company has raised money for construction purposes from large stockholders, and to give remaining stockholders an opportunity to participate in these loans.

The Western Transit Co. has closed a contract for a steel steam freighter, 343 feet over all, which will be built at the Detroit yard of the American Shipbuilding Co., and will cost $275,000.

The Rockwell Engineering Co. has removed its engineering and executive departments to its works at Jersey City, N. J. The sales offices will be as formerly, at 26 Cortlandt street, New York City.

CONVERSION OF STEEL STOCK STOPPED.

Judge E. H. Gary, chairman of the board of directors of the United States Steel Corporation, has issued a statement in regard to the syndicate contract for the conversion of steel preferred stock into second mortgage seconds, stating that no further conversion of preferred stock beyond the amount of $150,000,000, practically the amount already converted, would be made and that the syndicate contract would be terminated at this figure. Judge Gary's statement follows:

"At a meting of the finance committee of the United States Steel Corporation held yesterday it was (by unanimous vote) decided to suggest to Messrs. J. P. Morgan & Co. that the syndicate contract for the conversion of preferred stock into second mortgage 5 percent bonds should be canceled and terminated beyond the amount of $150,000,000, which figure has very nearly been reached.

"Messrs. J. P. Morgan & Co. immediately acceded to the request of the finance committee and no further exchange will be made for account of the syndicate beyond the amount stated.

"The matter now stands as follows: $146,388,500 bonds have already been issued in exchange for stock received and canceled; $3,611,500 remain to be issued in exchange for preferred stock to be converted by the syndicate; $2,902,000 bonds sold at par for cash and paid for in full October last and already issued; $17,098,000 bonds sold at part for cash upon which 25 percent was paid to the corporation Oct. 1, and which will be issued whenever the remaining 75 percent shall be called for and paid. Making a total issue of $170,000,000 outstanding.

"The balance of $30,000,000 of bonds available for sale for cash will be executed as stipulated in the indenture and be placed in the treasury of the corporation as an asset. This will make a total of $200,000,000 of bonds issued. The $50,000,000 remaining available for exchange for preferred stock will be held to subject to the exclusive right of the corporation itself to deal with from time to time as the board of directors may see fit. It is not the present intention of the corporation to make any futher conversion of preferred stock into bonds."

By converting $150,000,000 of 7 percent preferred stock into 5 percent bonds the corporation effects a yearly saving of $3,000,000. The statement shows that $20,000,000 of new bonds have been sold, which called for interest charges of $1,000,000 a year, so that the net saving in this item is $2,000,000 a year. It is further estimated that if the corporation should sell the $30,000,000 bonds now in the treasury, with additional interest charges of $1,500,000 a year, there would still be a yearly saving in interest of $500,000. A leading member of the syndicate said:

"An important factor is that $150,000,000 of preferred stock has been taken out of the market and so placed that, year by year, it will be entirely wiped out through the effect of the sinking fund provision in the bonds."

Krupp Patents for Increasing Strength.

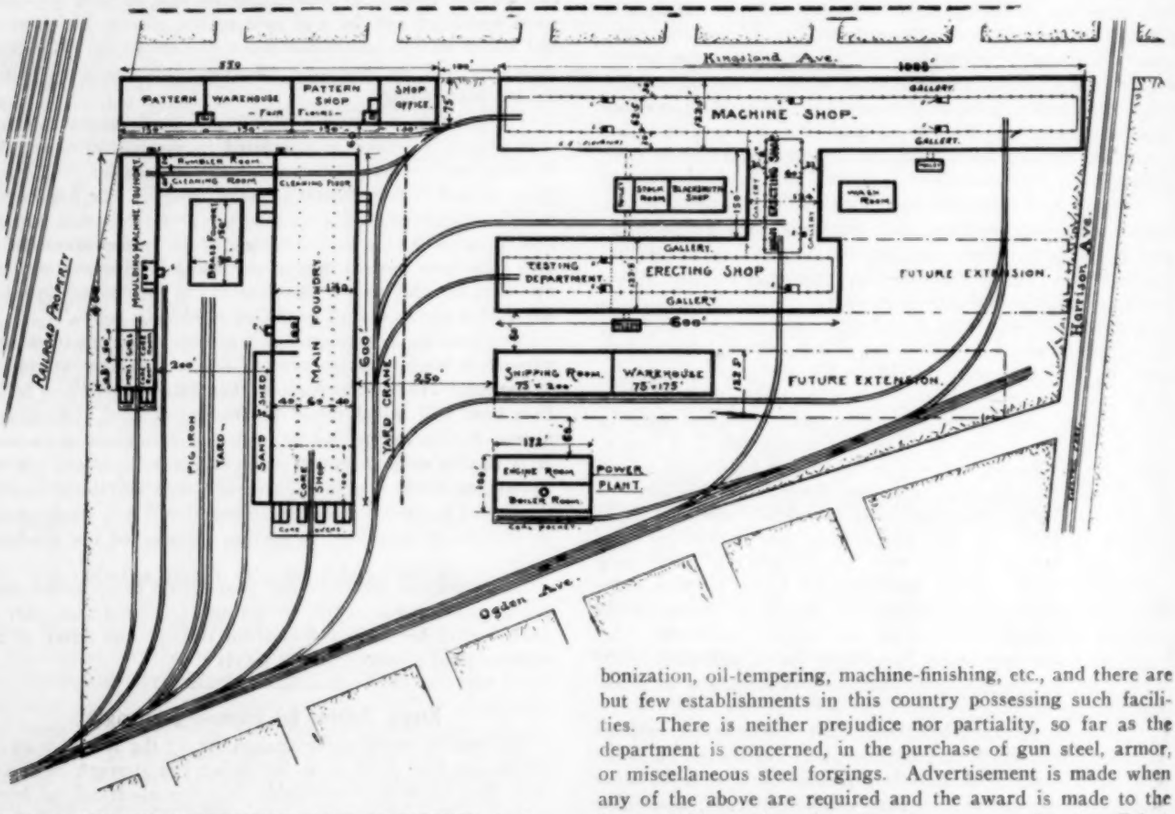
Among the recent patents taken out by the Krupp works at Essen are two directed at increasing the strength of metals. The first deals with malleable iron for electrical machinery where a high degree of permeability is required, and the end is attained by adding to the malleable cast iron (containing about 0.1 to 0.25 percent of carbon) a comparatively large amount of silicon, say, from 1 to 4 percent. The silicon is best added to the malleable cast iron in the form of ferrosilicon just before casting. Such a malleable cast iron has, in addition to a substantially greater strength, a high permeability, which renders it suitable for large machines running at a great number of revolutions.

The other patent relates to spring steel containing 0.4 to 1 percent of carbon, and a comparatively large amount of silicon, say between 1 and 4 percent, added to it. The raw material may be quite ordinary Martin steel, to which the required silicon is best added in the form of the cheap ferrosilicon, prior to casting. Experiments show that hardened steel of this composition possesses an increased strength.

The United States Steel Corporation and the Pennsylvania Steel Co. will roll about 10,000 tons of 75-pound rails, to be used in the construction of the Hankow-Canton railway.

THE NEW WORTHINGTON PLANT.

An extensive pump manufacturing plant, the largest in this country and probably in the world, is now under construction at Harrison, N. J. It is to be occupied by the firm of Henry R. Worthington, who employ about 3,000 men in their present works at South Brooklyn, L. I., and Elizabethport, N. J. The new plant at Harrison will accommodate from 4,000 to 5,000 men and will cost in the neighborhood of $2,000,000. It consists of a main machine shop with side galleries over 1,006 feet long, an erecting shop 592 feet long and of the same section as the machine shop and a high erecting shop 210 feet in length and four galleries in height in the side bays connecting the two shops. The main foundry is 600 feet in length and there is also a special foundry for small work, 410 feet in length, with a building 200 by 60 feet in size for cleaning castings connecting the two. The pattern building is four stories high and 550 feet long and is divided by wire walls into four sections. The North section will be used for offices and drafting rooms; the adjoining section for the pattern shop and the balance of the structure for pattern storage. The power house, which will be equipped with the most modern boilers, engines and generators, is a building 172 by 102 feet. Electric power distribution is to be employed throughout, and the grounds will be illuminated by electric arc lights.



PLAN OF THE NEW WORTHINGTON PLANT AT HARRISON, N. J.

There are other buildings which will be used for packing, storing and shipping goods, etc. The buildings are so arranged that additions can be built when the work demands it. All will be connected by a complete system of railroad tracks entering the ends of the buildings and placing the works in direct communication with the Delaware, Lackawanna & Western, the Erie and the Pennsylvania railroad systems. The new plant will be devoted entirely to the manufacture of water works machinery, water meters, cooling towers, condensers, feed-water heaters, centrifugal pumps and steam pumps of all kinds.

The Loomis-Pettibone Gas Machinery Co., of New York, has secured the American rights to the line of engines built by Crossley Brothers, of Manchester, Eng. The engines may be supplied in any size from 50 up to 2,500 b. h. p. and to run on natural, illuminating, producer and blast furnace gases as desired.

ALABAMA STEEL FOR THE NAVY.

United States Senator Morgan, of Alabama, has addressed a letter to the secretary of the navy, urging that a thorough investigation be made as to the ability and advisability of manufacturing armor plate and guns in the State of Alabama. The Senator states that metal for armor plate and guns, as good as any in the world, can be furnished at less cost in Alabama than in any other locality. He insists that careful investigation be made by capable and reliable experts, to ascertain the real facts of the matter.

In replying to Senator Morgan, Secretary Moody says:

"All gun steel and armor for the use of the navy is purchased after public advertisement and there is no reason whatever why the Alabama manufacturers should not bid therefor, if they so desire. The Government does not purchase raw material for making either guns or armor, having no facilities for converting it into billets or ingots. There appears to be no lack of steel, and no delay nor inconvenience is experienced in obtaining it. The fact that the Alabama steel manufacturers can produce steel of suitable quality and in sufficient quantity is of no direct benefit to the Government, so far as guns and armor are concerned, unless they can put it in such shape that the Government could use it. This requires extensive machine shops, equipped with the apparatus necessary for super-carbonization, oil-tempering, machine-finishing, etc., and there are but few establishments in this country possessing such facilities. There is neither prejudice nor partiality, so far as the department is concerned, in the purchase of gun steel, armor, or miscellaneous steel forgings. Advertisement is made when any of the above are required and the award is made to the lowest bidder, unless there is some very good and sufficient reason for doing otherwise.

"In view of these facts it does not appear to be necessary for the department to make any investigation into the ability of Alabama or any other State to produce steel of suitable quality for guns or armor. These matters are purely commercial enterprises, and as such will without doubt regulate themselves."

The anticipated partial closing down of the Minnequa Steel Works of the Colorado Fuel & Iron Co., at Pueblo, took place last week, and nearly 3,000 men were given their pay. It is estimated that there will be about 2,000 left at the plant to operate the departments which are still running. Those closed are two blast furnaces, rail mill, 40-inch rod mill, spike mill and pipe foundry.

The Colorado Fuel & Iron Co. has recently increased its force of men at its mines in Iron county, Utah, to about 100, and the property is being thoroughly explored.

THE FERGUSON OIL FURNACE.

Oil is an ideal fuel for shop purposes. It has no ashes as a result of combustion and every portion may be burned to advantage. The heating qualities of oil are also in excess of any other material which exists in large quantities. In order to obtain the full benefit of the fuel the furnace must be specially designed to suit all the conditions and with a correctly proportioned burner and combustion chamber with means for independently controlling the supply of oil and air, most satisfactory results may be obtained. There is an increase of output, with easy and perfect regulation; the time of the workmen is almost wholly given to better purpose than the tending of fires, and the uniform heat and lack of oxidation of the metal ensures that every piece is properly heated and that stock is not wasted by faulty heat treatment. Fuel is, of course, not required when the furnace is not doing useful work and there is the further advantage that there is no labor necessary for bringing fuel or removing ashes.

The Ferguson oil furnace is made by the Railway Materials Co. of Chicago, and is intended to meet the above requirements. The oil, either crude or fuel oil, is fed to the burner through a small supply pipe which contains a valve by which the flow of oil is accurately regulated. The oil may be fed to the burner by gravity or under an equivalent pressure. The air is supplied to the burner through an independent passage so that the amount of oxygen is under perfect control. The oil leaves the burner as a thin film and being brought into combination with the first supply of air is volatized. It now passes up through the primary combustion chamber and on reaching the secondary combustion chamber is combined with another supply of air. The oil is now in a state of combustion and the gases pass into the main or heating chamber of the furnace. No unburned oil enters this chamber. These furnaces are of the cold blast type and operate with a fan blast of not less than eight ounces at the furnace.

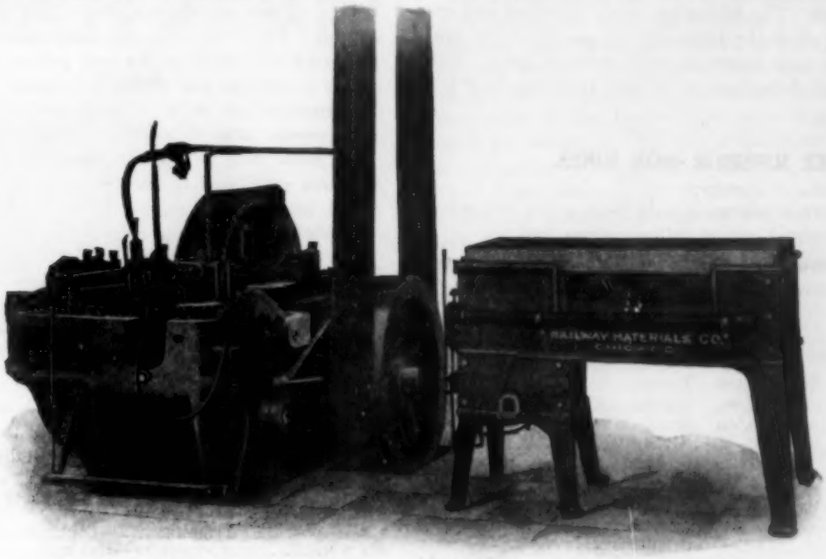


FIG. 1.—FORGING FURNACE.

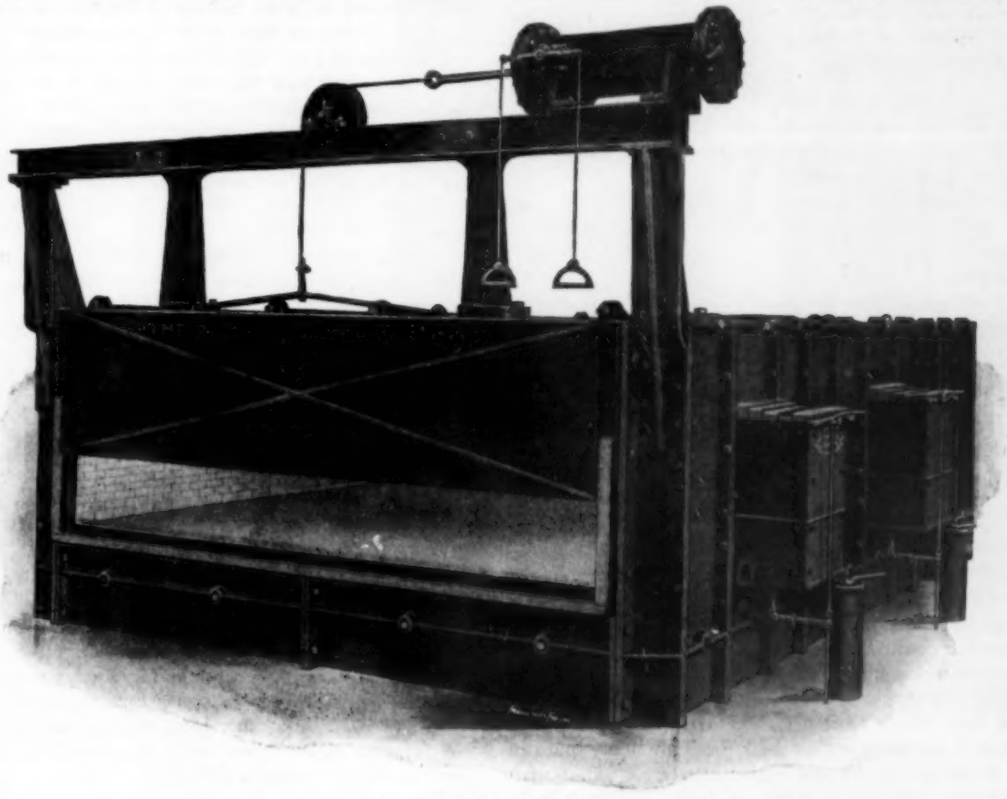


FIG. 2.—ANNEALING FURNACE.

The furnaces are especially designed for the particular purpose required and two of these have been selected for illus-

tration. Fig. 1 is a furnace for heating the stock for use with forging machines. The furnace shown is known as the small forging furnace, No. 1, and has been used on eye bolt work to the full capacity of the forging machine. Fig. 2 is an annealing and flanging furnace and has been introduced in boiler shop practice. The minimum space occupied and the absence of residue allow the furnace to be placed in the most convenient location with reference to the rolls or press. This furnace has internal dimensions of 13 feet 11 inches by 8 feet 10 inches.

LAKE SUPERIOR IRON MINES.

Minnesota iron ore shipments for the year, a few mines still shipping being estimated, are as follows, gross tons:

MESABI RANGE.	
Adams	1,109,798
Albany	120,000
Agnew	108,982
Biwabik	807,581
Burt	631,147
Cass	52,905
Chisholm	168,869
Clark	300,604
Commodore	20,436
Corsica	34,044
Croxton	100,645
Cypress	122,201
Day	107,640
Duluth	149,706
Elba	93,630
Fayal	1,460,815
Franklin	64,026
Genoa	303,713
Glen	171,757
Grant	18,928
Hawkins	107,773
Hull	433,302
Jordan	190,024
Kinney	31,000
Kanawha	24,844
LaBelle	48,298
Laura	97,782
Leetonia	200,160
Leonard	7 750
Lincoln	279,620
Longyear	81,823
LaRue	54,000
Mahoning	1,010,000
Malta	11,675
Minorca	115,000
Morrow	49,409
Mountain Iron	1,342,697
Oliver	5,866
Pearce	50,439
Penobscot	1,630
Pettit	62,323
Pillsbury	229,187
Rust	160,660
Sharon	48,199
St. Clair	6,148
Sellers	251,329
Sparta	40,373
Spruce	585,815
Stephens	87,055
Stevenson	1,014,582
Troy	15,000
Union	91,496
Utica	155,000
Victoria	27,973
Winifred	31,869
Total Mesabi	12,897,528
VERMILLION RANGE.	
Chandler	460,548
Pioneer	596,780
Savoy	169,616
Sibley	113,595
Zenith	161,091
Soudan	175,114
Total Vermillion.	1,676,744
Total for State, 1903	14,574,272

The Minnesota total for 1903 is about 850,000 tons less than that of 1902, when Minnesota shipped 15,427,103 tons, of which 13,342,840 tons came from the Mesabi range and 2,084,263 tons from the Vermillion range.

Genoa Mining Co. has commenced exploration work in the town site of Sparta, and will probably drill the entire village this winter. If sufficient ore is found the buildings will ultimately be moved elsewhere.

Leonard Mining Co. has closed down for the winter. About 225,000 yards of stripping have been taken from the pit and 7,750 tons of ore mined. No development will be carried on during the winter but it is hoped to start early next spring. The mine is in such shape that a week after operations begin it can be milling ore. A large and commodious dwelling has just been erected for the manager, Mr. E. F. Bradt.

Development is the only work in progress at Clark and Chisholm mines of the Minnesota Iron Co., section 28, T 58 R 20. No ore is being hoisted at any of the U. S. Steel properties in the Hibbing district now, except St. Clair.

Diamond drill explorations will be conducted near Mesaba Station by McCarthy & Goodman this winter.

Stripping on the 2,000,000-yard contract recently let at the Fayal mine has commenced and will continue till cold weather. A shovel is working in the old dump near No. 4 shaft. This stripping has disarranged railway terimnals near by and the Duluth & Iron Range road is to build a system of radiating tracks from a switching station near the Troy mine, south of the new stripping. Boiler and engine houses for No. 4 shaft are under way and several miles of track are being built. The stripping contractors are employing 300 men and three steam shovels.

Biwabik Mining Co. has now two shovels at work, one in the stripping and one making the new approach to the mine. This approach will compel the removal of the company's buildings.

Hand stripping is in progress at the Holland mine, Section 4, T 58, R 16, just west of Duluth and Canton mines. This is to be a milling property and a shaft will be sunk this winter. There are about 1,000,000 tons of excellent ore in the deposit. The owners of this mine have commenced exploration work with drills in the west side of Section 2, T 58, R 18, where conditions are somewhat similar, so far as superficial investigation can show, to their part of section 4.

Stevenson mine shipped last year 1,014,582 tons, of which a little more than 25,000 tons was all rail to St. Louis, Mo., furnaces over lines of the Northern Securities Co., reaching direct between terminals.

Probably the Interstate Iron Co. (Jones & Laughlin) will mine no ore at the Grant mine, Mesabi range, next year. It has developed Lincoln to produce 500,000 tons next year if desired. It has two large shafts and much development.

The Kinney mine has shipped less than half the quantity of ore expected by its owners, the Republic Iron & Steel Co. This is on account of the poor grade of what ore lies near the top of the deposit in the pit, and which, under their system of mining, they have been obliged to take away first. The mine has been stripped at heavy cost but a good deal of ore that might have been taken to one side and stocked for the future has been mined this summer.

If possible stripping will continue all winter at Monroe and Morris mines of the United States Steel Corporation, Mesabi range.

The Sullivan Machinery Co. has established offices in Duluth for the Lake Superior region, with Mr. W. R. Jarvis in charge. The business that has heretofore gone from that country to the Chicago offices will be handled from Duluth.

At Section 16 mine of the Lake Superior Iron Co., Ishpeming, they are to add 3-ton skips and a hoisting plant to correspond.

Explorations at old Platt mine, Cascade range, have started by the Oliver Mining Co. This mine has done very little since 1895, when its small stopes of high grade ore were supposed to have pinched out and were abandoned.

Exploration is to be carried on in the old workings and adjacent ground of Hale mine, Eastern Mesabi range, which was abandoned a year ago by the Colonial Mining Co.

Two hundred men have been let off at the Aragon mine Iron Mountain, Mich., and the mine will be worked under check all winter.

At East New York mine, Ishpeming, Mich., diamond drilling will be carried on through the winter to test the adjacent formation. The main shaft will be sunk to the 700-ft. level and drifts run from there.

At Dunn mine of Corrigan, McKinney & Co., near Crystal Falls, Mich., it is probable that shaft sinking will stop soon for the present.

The building of the large power station of the Cleveland-Cliffs Iron Co. at the Cleveland Lake mine, at Ishpeming, is nearing completion. Just south of the new power station the shaft has been sunk vertically to a depth of 400 feet. It is 15 x 10 feet inside of timbers, and contains four compartments. Over this will be placed a steel shafthouse of modern construction.

The first load of iron ore from the new iron mines at La Rue, west of Baraboo, Wis., was shipped to Chicago a few days ago. The ore came from the Illinois mine, which is the first in its district to turn out ore, though the Iroquois, which has a shaft down 200 feet, expects to reach the ore vein in a short time. The Illinois now has 25,000 tons on the surface and gives employment to about 150 miners. It is expected that at least 300 men will be working in the mine before Christmas. The men who have been conducting operations in this district are nearly all experienced miners, and have not made extravagant claims. The work of prospecting still continues and new drills are being started every week.

The corporation's Minnesota product in full was 9,226,815 tons, a decrease of 1,435,000 tons from last year. The ships of the steel corporation, under the title Pittsburg Steamship Co., and their contract vessels have moved this year a total of 12,500,000 gross tons of ore.

HOT WATER METER FOR BOILER EVAPORATIVE TESTS.

Having some simple device by which the amount of water fed to the boiler can be accurately measured, an engineer can readily test the evaporative values of various coals with a view to determining which is the most economical in developing power. Such a device is shown below. With the introduction of electricity and the consequent installation of large central power stations, and in large manufacturing establishments where the cost of power is an important item in cost of the product, a very careful record should be kept of the performance of the boiler plant, and there are few plants today that do not keep a close record of the coal consumption. But if the amount of water evaporated is not known, there is no way of separating the performance of the boiler itself from the balance of the plant.

FIG. 1.—DUPLEX PISTON WATER METER.

This separation is important as indicating efficiency. It shows when the boiler is affected by scale or soot and determines the most economical fuel, as well as determining the best method of firing either by hand or by mechanical stokers.

At one time the customary method of determining the amount of boiler feed water has been by weighing or measuring it. This is laborious, even for short tests, and is impracticable for daily work. The use of the feed water meter, on account of its simplicity, accuracy and reliability in evaporative tests, is now generally adopted by engineers for daily work, as well as for trial tests.

The most reliable test meters are of the positive displacement type, the best-known of which is the duplex pattern, measuring water by the means of two chambers alternately filled and emptied by the motion of their pistons. These meters, Fig. 1, are so constructed that it is impossible to pass water without a corresponding registration, for in order to pass through the meter the water must be displaced by the motion of the pistons and therefore recorded by the counter attachment. These pistons are closely fitted and move in parallel lines. The design, arrangement and construction of valves and parts is such that the strokes of the two pistons alternate, the valves actuated by one admitting pressure to the other. At the end of each motion, the pistons are brought to test by adjustable buffers which determine the length of the stroke. One of the pistons is constantly in motion, giving uniform flow of water, free from pulsation or shock. The meters are noiseless in their performance. They are designed and constructed of materials uniformly affected by expansion and contraction in passing water of varied degrees of temperature, thus further assuring accuracy.

For an ordinary test, one of these meters was calibrated. By deducting the weight of water as found by the meter registration from the actual tank weight, the figures showed the meter to be correct to within one-fifth of one per cent. This is considered a satisfactory showing for ordinary every day work. To obtain correct results, these test meters should be properly applied for operation, the size selected should be ample for the service, insuring slow piston speed, and pipe connections should be made so that at any time the meter can be cut out for examination or repairs without shutting down the boilers.

The accompanying cut, Fig. 2, prepared by Henry R. Worthington, shows the plan and elevation of a test meter with its pipes and connections, as applied to boilers for test, or for every day record. A and B are three-way cocks to pass water through the meter and to the boiler, or, for calibration, to allow water to pass by the angle valve E to a tank placed on scales for weighing. By this arrangement it is possible to test the meter as frequently as desired. By setting the cocks A and B and breaking the couplings F and C the meter may be removed without interrupting the operation of the boiler plant in any way. C is a gauge for indicating pressure; D is a thermometer for indicating the temperature of the water; H and J are pipe couplings. These connections should all be made of brass.

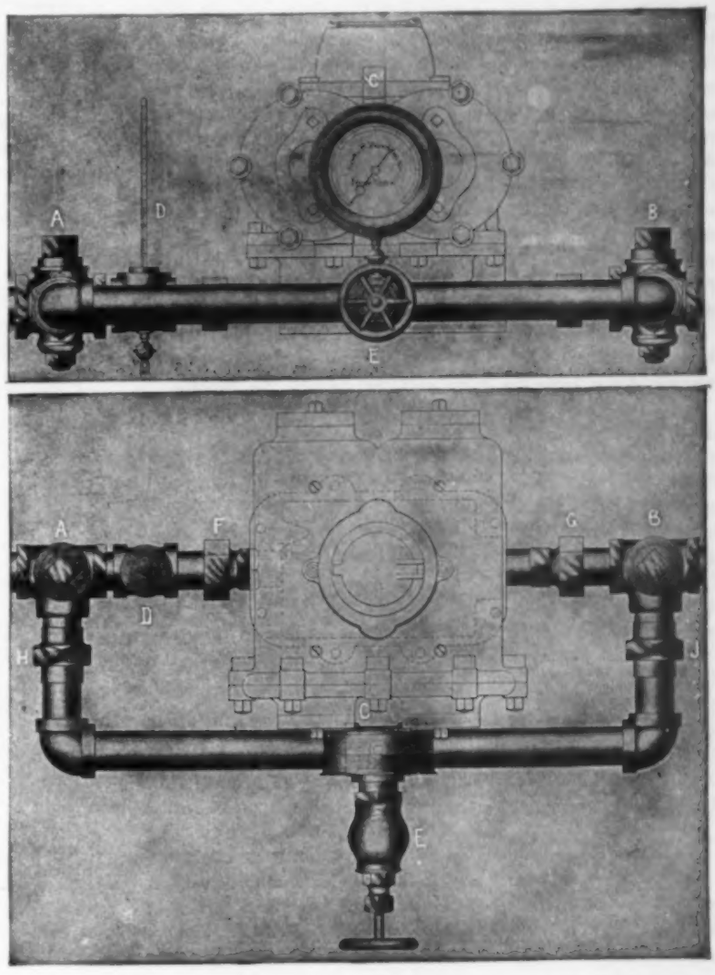


FIG. 2.—PLAN AND ELEVATION OF A TEST METER.

The Brown Corliss Engine Co., of Corliss, Wis., announces that it is about to complete a contract with a foreign corporation to handle a line of blast furnace gas engines. The company has also gone heavily into saw mill machinery for which it has opened a special department in the Wells building, Milwaukee, in charge of Theo. S. Wilkin. These new lines will be carried on in connection with the Brown Corliss Engine Co.'s Corliss engine and rolling mill work.

A fifth stove is being added at the Searles furnace of the La Follette Coal, Iron & Railway Co., in La Follette, Tenn., which was built and placed in operation about two years ago. The new stove, which is 90 x 18 feet, together with appurtenant piping, connections and fittings, is being built by the William B. Pollock Co., Youngstown, O., steel plate construction builder. H. M. La Follette is general manager of the Searles furnace.

ADDING SILICON TO BASIC OPEN-HEARTH STEEL.

Perhaps no more troublesome features have arisen among manufacturers of steel castings who are using the basic process than the control of silicon in the furnace additions just previous to tapping. From the nature of the method whereby the phosphorus is all or nearly all removed from the metal by the lime flux employed, the compound thus formed between the phosphorus and calcium of the flux is very easily dissociated, leaving the phosphorus in a liberated state, which is quickly re-absorbed by the steel in the bath. This breaking up of the chemical compound is usually caused by the addition of silicon or silicates, which form silicates of calcium and set free the phosphorus.

It often occurs in analyzing a cast of basic steel that a percentage of phosphorus is found which in some cases is so great as to preclude any possible use of the castings with safety. At certain works employing the basic process and where I have made exhaustive tests and experiments along this line, I have found that the last furnace test sent to the laboratory previous to tapping the heat has shown less than .005 percent of phosphorus while the castings poured woul sometimes reach as high as .15 percent phosphorus.

Such occurrences, while not often met with in carefully managed furnaces, do happen, however, much to the discomfiture of the producer and the chemist, the latter often being blamed for incorrect determinations when in reality he should have been fully exonerated.

This return of phosphorus to the metal may be attributed to three causes. The first is the injudicious use of ore when the carbon is already nearly low enough to conform to the requirements. Melters often try to hasten a heat at the finish for no other reason than their personal desire to produce an early tap. To do this they lower the carbon rapidly by the use of iron ore, overcharging the metal with oxygen and oxides, which eagerly unite with the silicon subsequently added, thus forming new silicates to react upon the slag detrimentally The metal not only picks up more phosphorus, but is apt to be "wild" in the molds, caused by the insufficient amount of silicon present to quiet the metal. An increase of manganese or aluminum would to a certain extent act beneficially, but if the use of ore is prohibited toward the final time of refining much more satisfactory metal is produced.

The second cause, though not of so common occurrence, is the entrance of silicates into the bath from molten silica brick running down from the ports and the roof of the furnace.

The third cause, and the one which has been the bete noir of all basic steel men, is the difficulty of adding silicon with the least action on the slag, and it is the writer's purpose to outline a process which is not only theoretically feasible, but which has produced hundreds of consecutive heats of absolutely quiet metal, extremely low in phosphorus, and making an excellent quality of tough, strong steel.

The method usually pursued is to allow the ferro-silicon or silico-spiegel additions to melt in the bath after being first preheated to redness or below that temperature. In this way a considerable portion of the silicon is lost and taken up by the slag, giving a higher phosphorus metal with a much lower silicon content than would be shown by mathematical calculation of the exact percentage, based on the analysis of the material used in the addition. In the most carefully conducted heats this loss of silicon is appalling, and while perhaps this is given little consideration by the management, it is really a matter of dollars.

My system is as follows: Arrange a small cupola whose bed approaches as nearly as possible the amount of furnace additions to be used. As soon as the furnaceman finds his heat nearing completion, the blast is put on at the cupola and the charge melted down and drawn off into a small ladle which is taken to the open hearth furnace and held over the large ladle in readiness for the tapping of the steel.

Assuming the chemist has found the steel free from phosphorus, a tap is made and the molten additions allowed to run into the large ladle, while not more than one-half the steel has run out from the furnace. By the time the slag has come, the steel has absorbed the silicon and manganese and there is no further action on the slag.

I have found it advisable to melt about one-half of the ferro-manganese to be used, in the cupola with the ferro-silicon and the other half I run through the furnace in the usual way. This quiets the metal and gives better results than if the metal were tapped when boiling and also gives a smaller loss of silicon.

If this method of molten additions is carefully manipulated there need be little loss of silicon and the use of aluminum will never be found necessary.—[W. E. Mumford in The Foundry.

Domestic Pig Iron and Steel in Canada.

Only a few weeks ago Canadian steel manufactured under bounty was underselling Pennsylvania steel in Eastern markets, in spite of the tariff. Now that American steel manufacturers are seeking outer markets the tide has turned. Pig iron and finished material from the States are being offered in Canada at considerably less than the price of Canadian products. George E. Drummond, president of the Canada Iron Furnace Co., is quoted by a Montreal paper as follows: "The Canadian market is at present overrun with drummers offering American pig iron at slaughter prices, concessions being readily made for export to Canada. The duty against this iron is $2.50 a ton. It ought to be $3.50 a ton, the American tariff against Canadian pig iron being $4 per ton. American steel and iron products of all classes are now being offered to the trade at special cut prices for delivery in Canada. I would mention steel beams, plates, angles, channels and rivet steel. These special lines are being offered for Canadian delivery at from 40 to 50 cents per 100 pounds less than the prices current at Pittsburg." John Taylor, a member of the Canadian Manufacturers' Association, says: "American pig iron is offered at $2 per ton below the lowest Canadian price, and American steel at a cut of 25 percent on the price that has been ruling in Canada. We have simply got to go out of business in some lines for next year. American goods are coming in at under valuation prices, and Canadian buyers are snapping them up in some lines at prices lower that we can possibly make them."

The North Wales Foundry Co., Inc., with office at 121 N. Second street, Philadelphia, and foundry at North Wales, Pa., has recently added to its official force John Patton, of Philadelphia, who will have charge of the foundry. Since its incorporation in February of this year, the company has made a number of improvements and additions, has more than doubled its business and is preparing for a large increase in the coming year. A large order for stove plate has recently been completed for a well known company, and the foundry is in position to take contracts for castings of all kinds. A specialty is made of gas stove work. S. C. Wells, for many years connected with Thomas Roberts Stevenson Co., is secretary and manager of the company.

Marks Nathan, the "scrap iron king," of Chicago, whose will has just been filed, left provision for the erection of a synagogue in Jerusalem. He also left instructions that land be purchased in the Holy City and dwellings erected for the free-housing of the families of poor and deserving Jews. Out of a total fortune of $120,000 made in the buying and selling of scrap iron, Mr. Nathan bequeathed $46,500 to charity. The amount named for expenditure in Jerusalem was $15,000. An equal sum was set aside for the erection of a Jewish hospital or asylum for Jewish orphans.

The Newark Malleable Iron Co. recently incorporated under the laws of New Jersey, will locate on the property at the corner of New Jersey Railroad avenue and Johnson street, Newark, N. J., manufacturing a general line of malleable castings. This plant was used some years ago as a foundry but the buildings that are now already erected will be altered to meet present methods. In addition it is proposed to erect a new molding shop, brick construction, about 100 x 100 feet. The company has secured the services of James M. Cory, who has been in the malleable foundry business since 1869, and is well known in the trade.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

The general program of the annual meeting of the American Society of Mechanical Engineers, at New York, Dec. 1-4 inclusive, was given in *The Iron Trade Review* of Nov. 5. The address of the president, James M. Dodge, on "The Money Value of Technical Training," will be delivered at the opening session on Tuesday evening in the house of the society. The second session on Wednesday morning, Dec. 2, will be held in the hall of the Mendelssohn Union, 113 West 40th street. This session will be the business session of the annual meeting for the reports of the council, tellers, and of committees of the society, standing and special, and also the report of the special committee on specifications. The report of the tellers on the adoption of the rules will be presented at this meeting, and the president elected for the ensuing year will be welcomed by the presiding officer. The report of the committee on the Carnegie building will also be presented at this session. Professional papers will be taken up and will include the following: "Is Anything the Matter with Piece Work?" by Frank Richards; "Modifying Systems of Management," by H. L. Gantt; "Slide Rules for the Machine Shop as a Part of the Taylor System of Management," by C. G. Barth; "What are the New Machine Tools to Be?" by John E. Sweet; "Suggestions for Shop Construction," by F. A. Scheffler.

On Wednesday afternoon it has been arranged that the stations of the Interurban Street Railway Co., at 93d street; the Manhattan Elevated Railway Co., at 74th street, and the Waterside Station of the New York Edison Co., at 38th street, shall be open to members, and the numbered badge will be sufficient to secure admission. The third session on Thursday morning will be at the Stevens Institute of Technology, Hoboken, N. J., and the following professional papers will be read and discussed: "The Pitot Tube," by W. B. Gregory; "Method of Determining Rates and Prices for Electric Power," by F. B. Perry; "Three and Four Wire Multiple Voltage Systems," by Louis A. Gillet; "Test of a Compound Engine Using Superheated Steam," by D. S. Jacobus; "Pressure Temperature Curve of Sulphurous Anhydride (SO^2)," by E. F. Miller; "Construction and Efficiency of a Fleming Four-Valve Engine," by Benj. T. Allen. At the closing session on Friday morning at the society house professional papers will be read as follows: "A Compact Gas Engine, Beam Type," by C. H. Morgan; "Standard Unit of Refrigeration," by J. C. Bertsch; "Series Distilling Apparatus of High Efficiency," by W. F. M. Goss; "Apparatus and Methods for Testing Air Motors and Air Hammers," by Max H. Wickhorst; "Valve Motion of Duplex Air Compressor," by S. H. Bunnell. On Friday afternoon an excursion to the works of the DeLaval Steam Turbine Co., at Trenton, N. J., will be arranged, if a sufficient number desire it. Chicago has been selected for the spring meeting of 1904, with a view to enabling members to make an easy journey to the Louisiana Purchase Exposition at St. Louis, without exposing them to a convention in a crowded exposition city.

Some changes have been made in the program as presented above; the paper by Louis A. Gillet will be deferred for presentation at the spring meeting and the following list of subjects is being sent to the members for topical discussion:

159. Casting iron on steel shafts.

160. Use of producer fuel under boilers.

161. Has anyone used graphite successfully, over long periods, as a lubricant to replace cylinder oil?

162. What are the minimum allowances of cylinder oil and new waste, per 24 hours, per 100-h. p., in a power plant of ordinary size?

163. What success and economy do you find in heating with exhaust steam rather than with live steam in mill work?

164. What type of gas-producer has been found to give best results for gas-engine work?

165. What are the best records of performance for gas-engines, using producer gas, and also for those using blast-furnace gas?

166. Is there any limit to the increase of economy with the increase of temperature of superheated steam? If so, where is it, and what brings it about?

167. What is the cause of the rapid deterioration of the tubes of surface condensers, in some cases, and how can it be best prevented?

168. What is to be the future of the apprenticeship system? What plans are now working well?

169. What success, if any, and what economy is there in heating mills with hot water heated by exhaust steam in a feed water heater and pumping it around through the mill, in comparison with heating by exhaust steam through the lines?

170. What has been your success in the collecting and utilization of water of condensation for manufacturing purposes?

171. Separation of oil on condensing engines.

AN ENGLISH VIEW OF OUR TECHNICAL SCHOOLS.

The principal of the Northhampton Institute, at Clerkenwell, Eng., Mr. Walmsley, at the suggestion of the governing board of the school, made a tour during the year of a number of technical colleges in the United States. His special purpose was to investigate the methods in vogue for training students in engineering, horological and optical subjects as well as to elicit the opinions of employers as to the measure of success attained by the institutions visited in providing the class of assistance required by the exigiences of modern manufacturing. His inquiry had mainly to do with the class of students who enter the engineering department of a university, or the day-classes of a polytechnic or technical institute with a view to graduating as engineers.

Besides the fact that there are more and better equipped colleges for the training of engineering students in America than in Britain, Mr. Walmsley points out that, while in England a large number of technically qualified young men are annually absorbed by the naval and military, the civil, the colonial, and the Indian services, there is but little employment of a cognate kind in the United States; consequently the great majority of the students qualify for a commercial career. He asserts that during the last few years, by means of scholarships, numerous recruits from other classes of the community in Britain have been placed in a position to choose a professional career if they desired it. Amongst these scholar: however, the proportion training for an engineering career is not large. Out of the 179 London intermediate county scholars in attendance in 1902, only 25 are attending technical engineering courses. This proportion of engineering scholars is high when compared with what may be assumed to be corresponding figures for the whole of the pupils leaving the secondary schools in a given year, but is certainly low when one considers the circumstances under which these scholarships are awarded, and the classes from which the scholars are drawn. It is, perhaps, characteristic of the difference of the position in the two countries that in this last instance the English students are under 16 years of age at the commencement of their scholarship term, and on emergence from the collegiate engineering training will only be about 19 years old.

Mr. Walmsley finds that in the United States, the students taking up a collegiate engineering training direct from the secondary school can be counted in hundreds as compared with tens or less in this country, that they enter the colleges at a later period of life, and that they are better prepared, on the average, for the work. In addition to these youths, however, there as a fair but variable percentage of older students, consisting of men who have been obliged through various circumstances to start practical wage-earning life at an early age, and who, having saved the necessary money, or being otherwise able to procure the necessary means and leisure, return to school discipline and training with very definite objects in view, and not unfrequently become the most successful of the engineering students. Owing to the number of institutions in the United States giving technical training the curricula naturally vary considerably, especially if they are minutely examined and the number of hours given to the different subjects analyzed. Generally it may be said that the period occupied is four years, and that of these the first two are devoted to an ordinary scientific training in mathematics, chemistry, and physics, though often subjects of general, as distinct from professional, educational value—*e. g.*,

English, modern languages, aand rhetoric—are included, and sometimes mechanical drawing, which is distinctly professional, is added. Frequently, however, in these two years a certain amount, in some cases a considerable amount, of time is given to workshop practice. With these exceptions the actual engineering training does not commence until the third of the four years, and in many cases even in this year a certain amount of time is devoted to non-professional subjects. In the last year of the four a crowd of professional subjects is introduced, with the result that in many cases the student is unable to assimilate all that is placed before him.

The equipment of the buildings devoted to engineering education is usually more complete and on a larger scale than is to be found in England. Indeed, to a visitor the accommodation provided seems lavish, and quite equal to the resources by the large technical schools on the European continent. That this may well be so will be readily understood when it is stated that during the 11 years 1890-1901 no less a sum than £23,000,000, sterling, of private money, in addition to large State grants, have been appropriated to furthering the subject of technical education in the United States.

As regards the teaching staffs, the results of the investigation were not quite so satisfactory. The problem in the States, as elsewhere, is how to find men combining practical commercial experience on the subjects they are called upon to teach with the capacity to impart that knowledge. Such men being scarce, and the success of a particular college or school depending largely upon the help of the best men, keen competition for these instructors exists in America, and consequently the engineering staff of an institution usually command much higher salaries than their colleagues in other departments. There are, of course, certain advantages accruing to the position of a college professor and some teachers are also allowed to undertake a limited amount of outside work as a means of augmenting their income and of keeping in touch with current practice and technical progress. In the opinion of many manufacturers, however, there is still much room for improvement in the quality of the teaching staff.

Notwithstanding the large number of engineering graduates turned out each year, there is no difficulty in finding positions at good commencing salaries for all, and in many cases it is claimed that the whole of the graduating class is placed some weeks before the end of the graduating year. Naturally some colleges rank higher in favor than others, and for the services of the graduates of the institutions with the best reputation the competition amongst manufacturers is often quite keen. In some cases the college graduates are called apprentices, and are expected to begin work in the factory at the very bottom. The subsequent career of such "apprentices" depends far more upon themselves in America than in England. Outside influences are not allowed to interfere in the matter of promotion, merit and assiduity being the only recognized stepping-stones to advancement.

Action of Eastern Bar Iron Manufacturers.

At a meeting held in New York, Nov. 20, of manufacturers of bar iron, east of Pittsburg, it was decided to reduce the output 50 percent by running the mills on part time for an indefinite period owing to overproduction. The mills affected are: Reading Iron Co. at Danville, Pa.; Scranton Bolt & Nut Co., Scranton; Boonton Iron & Steel Co., Boonton, N. J.; Diamond State Steel Co., Wilmington, Del.; New Haven Iron & Steel Co., New Haven, Ct.; Kingsley Iron & Machine Co., Canton, Mass., and the West End Rolling Mill Co., Lebanon Pa.

The National Hardware Manufacturers' Association concluded its session at Atlantic City, N. J., Nov. 20, by electing the following officers for the ensuing year: President, J. C. Birge, St. Louis; vice president, F. S. Kectchinger, Ft. Madison, Ia.; Henry B. Lupton, Pittsburg; George W. Corbin, New Britain, Ct.; secretary-treasurer, F. D. Mitchell, Philadelphia; executive committee, C. W. Asbury, Philadelphia, chairman; Robert Carland, Pittsburg; N. A. Gladding, Indianapolis; George P. Hart, New Britian, Ct.; William M. Pratt, Greenfield, Mass.; W. S. McKinney, Allegheny; E. G. Buckwell, Cleveland; E. B. Pike, Pike Station, N. H. The manufacturers will meet in Atlantic City next year.

AMERICAN STEEL IN EUROPEAN MARKETS.

The London *Iron and Coal Trades Review* for Nov. 13 has the following on the general condition of the trade in finished iron and steel in Great Britain, which shows on what basis American billets and sheet bars are being sold for British delivery: "In the finished department of the iron and steel trades business remains quiet, and the market has a somewhat easier tendency, while several actual reductions are announced. Shipbuilding material remains in but poor demand, and in Scotland steel ship plates are down 2s. 6d. per ton, a decline which is reflected in similar material in the north of England, where steel ship angles are reduced to £5 5s., iron ship angles to £6, steel ship plates to £5 12s. 6d. and iron ship plates to £6 7s. 6d., less 2½ percent. Iron and steel ship rivets are also cheaper. In other branches of the trade considerable German and American competition is making itself felt, and in some kinds of steel the latter is increasing, prices being quoted undercutting Continental material. German steel billets, for instance, are offering in Manchester at from £4 4s. to £4 5s., while the American article is priced at £4 2s. 6d. The English quotation is from £4 10s. to £4 13s. 6d. In American steel sheet bars transactions have taken place at £4, c. i. f. Liverpool, while Messrs. Lysaght are reported to have bought at 75s."

The Manchester, Eng., market review of the same journal has the following:

"Both American and German competition is making itself felt in the steel trade, and has a weakening effect upon prices. For English billets quotations range from £4 10s. up to £4 12s. 6d. and £4 13s. 6d. quoted by local makers, with German billets offering from £4 4s. to £4 4s. 6d. for 4-inch upwards to £4 5s. and £4 5s. 6d. for 2-inch and upwards, and American billets reported about £4 2s. 6d., with consumers in this district expecting to buy billets before the close of the year at about £4 per ton. In American steel sheet bars there have been some considerable transactions based at about £4 c. i. f. Liverpool, a figure which is cutting out German competition and some of the large buyers are now transferring their German contracts on to American bars. Local users of common plates for structural purposes are negotiating with German houses for contracts at prices considerably below English quotations, which remain about £6 to £6 2s. 6d. for common plates delivered in this district, although, no doubt, under these figures would be accepted if actual business were offering. Steel boiler plates remain at £6 12s. 6d. delivered here but owing to the extreme quietude in the boiler-making trade there is very little business passing through. Ordinary steel bars are quoted from £6 3s. 6d. and £6 5s. to £6 7s. 6d., with £6 10s. as a special quotation for delivery in this district."

A London market report says: "It is exceedingly difficult to obtain any reliable information regarding what is being done in American steel and iron in the export markets. We are informed that somewhere about 1,000 tons of Southern iron have been sold at about 50s., c. i. f., and No. 3 Alabama is said to be obtainable at 48s., c. i. f. Mediterranean ports, and 44s. 6d., c. i. f. Hamburg. Southern gray forge iron has been offered at 48s. delivered Warrington and Wigan, this price being equal to 45s. 6d. on trucks at quay, and several thousand tons are reported to have been sold to Genoa. Southern foundry iron is said to be offered freely for November shipment, and offers have been made for delivery 'within fourteen days,' so that it looks as if there were metal on the way in cotton ships."

German advices to the London *Ironmonger* of Nov. 14 note that "the first offers of American pig iron have been made this week, and it is stated upon good authority that the prices quoted, free consumers works, are from 2s. to 3s. below German figures. The so-called American peril is thus nearer than it was a month ago. Nevertheless, there is no reason for exaggerating the importance of this competition on our market, as it is perfectly well known that for our industries certain qualities of German pig iron are indispensable, whilst the American cannot be used. The exports have, of course decreased, but the blast furnaces are nearly everywhere fully employed, especially on foundry qualities. The prices for scrap are always very high, so that works are studying the question of using Thomas steel in the melted condition directly

in the open-hearth furnace. The results are said to be very satisfactory, costs being considerably reduced. Semi-products have been in good demand, and orders have been booked for American blooms. For export the following prices are quoted: Billets, 72s. to 74s. (Thomas); and slabs, 74s. to 76s. (Thomas).

Reports from Belgium are that the iron trade continues to be unsatisfactory and depressed. "It is reported that American blooms have been sold to this country for shipment early next year. Prices for raw materials are weaker, while for most descriptions of finished goods exceedingly keen competition is experienced for orders of any magnitude. Remunerative business is almost out of the question."

Eastern Pennsylvania.

HARRISBURG, PA., Nov. 24.—Conditions in this part of the Keystone State are not improving and the big steel companies and smaller mills are reducing their forces and time. The Pennsylvania railroad has cut shop time and the iron and sheet companies have laid off many laborers and reduced the time of others. Wage reductions have been numerous and the $4 puddle rate is general east of the mountains.

A number of contracts have been placed lately and the chain works at Lebanon have received some valuable awards from the Government. Not many plate contracts have been given and the merchant iron mills report only a small trade, although all appear to be optimistic as to the winter's business after financial conditions are adjusted.

The Middletown car works are making a number of additions. A new car, known as the Vanderbilt oil car, is being built. The National Tube Co. will soon have its plant there running full time, the galvanizing department having started.

The State has granted a charter to the Collegeville Foundry & Machine Co., capital $25,000. It will operate the works in Collegeville, Montgomery county, and local capital is interested.

The Parkesburg and Altoona Iron companies have shut down their plants and will not run until more orders are on hand. Both operate puddle mills.

A further cut of 10 percent in wages has been made at Alburtis furnaces of the Thomas Iron Co.

The Harrisburg Pipe & Pipe Bending Works have started their new rolling mill. The open-hearth steel plant is in operation on full time.

Over half of the furnaces in the Lehigh Valley have suspended and the conditions there are not very bright.

The Reading Hardware Co. has elected the following officers: John E. Harbster, president; succeeding M. Harbster, founder of the company, which practically controls all of the hardware business in Reading; A. A. Gery, vice president; Howard L. Boas, secretary, in place of J. E. Harbster; S. Y. Riegner, treasurer, succeeding G. Nicholas Jacobi, manager of sales. The officers and Isaac Treat and John Mohn are the directors. The company will build a $14,000 warehouse at its works and is receiving bids.

Marshall furnace at Newport has been relined and will be started when trade conditions improve.

An elaborate monograph, Volume XLV, on the Vermilion Iron-Bearing District of Minnesota, has been prepared by J. Morgan Clements, of the United States Geological Survey, under the direction of Prof. Charles R. Van Hise, and is now ready for distribution by the director of the United States Geological Survey, Washington, D. C. The monograph is the fifth of the series of six treating of the iron-bearing district of the Lake Superior region. The monographs on the Penokee, Marquette, Crystal Falls, and Mesabi districts have already been published. The last of the series will be a monograph on the Menominee district, by Mr. W. S. Bayley, which is now in press. The Vermilion report is illustrated by 13 plates and 23 figures, and is accompanied by an atlas containing 26 topographic sheets.

At Trenton, N. J., Chancellor Magie has granted an order to show cause why a receiver should not be appointed for the American Cutlery Co. The application is made by John G. Schanck, of Keyport, a creditor to the amount of $3,399.56, who declares that the company is insolvent.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review* and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

Patapsco Machine & Supply Co., Baltimore, has been incorporated, with capital stock of $25,000, and will conduct a general machine shop and foundry at 210-212 Patterson street. Charles Tyler is president, F. Oscar Reuter secretary, and Walter B. Tyler general manager. Offices are at 410 East Pratt street.

J. W. Minor, Ronda, N. C., wants prices on 25 to 30-horsepower horizontal engine and 25 to 40-horsepower tubular boiler, second-hand.

White Gin & Cotton Co., Lancaster, Tex., wants prices on 70-horsepower engine, heater and pumps.

Anthracite Machinery & Supply Co., Allentown, Pa., wants six 150 and 125-horsepower, two 100-horsepower horizontal return tubular boilers, complete with stack, high-pressure and tank pumps; 500-horsepower vertical water-tube boilers or two of 250 horsepower, wood and iron tanks, pipe, wire cables, 1¾ and up in diameter, rails, also vertical boilers and engines from 4 to 25 horsepower; all to be second-hand in good condition.

Virginia Machine Co., Waynesboro, Va., is in the market for an 84-inch to 14-foot boring mill and a 44 to 54-inch planer, open side preferred, second-hand.

Dublin Wagon & Machine Co., Dublin, Ga., wants prices and description on small power punch and shear for wagon factory.

Union Iron Works Co., Selma, Ala., wants to correspond with foundrymen who make steel crankshafts.

The Milwaukee Steel Foundry Co., Milwaukee, Wis., has been incorporated with a capital of $10,000. The incorporators are: C. F. Maynard, W. T. Maynard and J. G. Shaw.

The Cloud-Marple Pneumatic Tool Co., Philadelphia, has been incorporated with a capital of $100,000. The incorporators are: John D. Cloud, Joel Marple and Frank P. McDermott.

The Globe Machinery Co., Salt Lake City, Utah, has been incorporated with a capital of $10,000. The officers of the company are: Charles G. Leuthstrom, president; A. W. Stevenson, vice president; E. C. Leuthstrom, secretary and treasurer.

The Consolidated Box Machine Co., Lynn, Mass., has been incorporated with a capital of $60,000. The incorporators are: George E. Gooding, Cora B. Healey, George W. Glazier, Charles C. Briggs, Ira B. Keith.

The Reliance Kerosene Motor Co., New York City, has been incorporated with a capital of $100,000. The incorporators and directors for the first year are: F. L. Nichols Stamford, Conn.; O. G. Zueschmer, Ed H. Sharrott, New York City.

The W. J. Davis Machine Co., Wilson, N. C., has been incorporated with a capital of $50,000, to conduct machine shops.

The Smith Vehicle & Hardware Co., St. Marys, O., capital $15,000; has been incorporated by Jas. P. Smith, J. F. Dunn, L. G. Neely, D. F. Mooney and J. Z. Riley.

The Champion Machinery Co., Cleveland, capital $15,000, has been incorporated by Ernest C. Meyer, Fred J. Connelly, Harry O. Connelly, Amos V. Ellis and Lewis W. Greve. The company will not be ready for several months to announce its plans.

Citizens of Adrian, Mich., have organized the Kells Foundry & Machine Co. The capital of the company is to be $80,000, of which a part has been subscribed. The company expects to do a foundry business to manufacture gasoline engines.

The Quality Stove & Range Co., Belleville, Ill., has been incorporated with a capital of $2,000, to manufacture stoves and ranges. The incorporators are: Louis Opp, Henry Ehret, George M. Jackson.

A company is being formed at South Bend, Ind., to build a plant and manufacture a steam boiler invented by F. S. Smith, of South Bend. It is proposed to make the capital stock $500,000.

The Onondaga Mfg. & Promoting Co., Syracuse, N. Y., has

been organized with a capital of $50,000, to manufacture engines. The incorporators are: James D. Smith, Robert N. Phinney, Syracuse, N. Y.; A. E. Fletcher, Canandaigua, N. Y.

The Baldwin Motor Co., Baldwinsville, L. I., has been incorporated with a capital of $10,000, to manufacture gas engines. The incorporators are: H. Wortman, H. Coakley, William Coakley, Baldwinsville, L. I.

Incorporation has been granted to Lawrence Fulton Braine, of Newark, N. J.; David Harry Friedman, Albany, and David Muhlfeldu, of Albany, N. Y., and H. W. Near and C. L. Dunbar, of Guelph, Ont., as the Continuous Rail Joint Co., of Canada, which will manufacture and deal in iron and steel and other metals and railway appliances. Capital $49,000.

The Richmond Mfg. Co. has been organized at Livermore Falls, Me., to engage in wood and metal manufacturing, with $50,000 capital, of which $12,000 is paid in. The officers are: President, Edwin Riley, and treasurer, John H. Maxwell, both of Livermore Falls.

The Tate Mfg. Co., Chicago, Ill., has been incorporated with a capital of $100,000, for the manufacture of machinery. The incorporators are: N. O. Tate, William Prentice, Jr., and Francis O'Shaughnessy.

The Faunt Bros. have been incorporated at Chicago with a capital of $9,000 to manufacture brass castings. The incorporators are: R. C. Faunt, W. E. O'Neill and S. M. St. Clair.

The Oshkosh Grass Matting Co., Oshkosh, Wis., is in the market for 150 horsepower engine boilers, shafting, hangers, etc. The company is erecting a plant, of which the main building will be 60 x 250 feet, the warehouse 60 x 150 feet, and a power house.

The Texas Wire Fence Co., Denton, Texas, capital $20,000, has been incorporated to manufacture wire fencing, office railings, etc. The incorporators are: G. W. Harmonson, E. J. Brock, G. H. Blewett, J. E. Henderson and J. W. Skiles.

The National Gate Co., Deansboro, N. Y., capital $15,000, has been incorporated by George S. Patrick, of Waterville; Abram D. Van Vechten, Robert H. Hadcock and William F. Kimball, of Deansboro. The company will manufacture iron gates.

The Chicago Gasoline Engine Co., Chicago, has been incorporated with a capital of $2,500, to manufacture gasoline engines.

The Adair Machine Works Co., Anniston, Ala., has been organized with a capital of $12,000. The following officers have been elected: President and manager, H. B. Rudisill; vice president, T. W. Adair; secretary and treasurer, H. W. Sexton; superintendent, G. W. Adair.

Fires and Accidents:—

The plant of the Eagle Steel Range Co., Shelbyville, Ind., recently built, was destroyed by fire Nov. 13. Loss $15,000; insurance $3,500.

The plant of the Hamilton Brass Mfg. Co., Hamilton, Ont., was destroyed by fire Nov. 12. Loss $40,000; insurance $30,000. About 100 men are thrown out of employment.

The foundry of the Story Iron Works, Bozeman, Mont., was damaged by fire to the extent of $1,000 Nov. 12.

The machine shop and storage building of the Grasselli Chemical Co., Cleveland, was destroyed by fire Nov. 12. Loss $12,000. The building was a frame structure, 150 x 75 feet, and contained a blacksmith and machine shop on the ground floor.

In a breakout at the plant of the R. Heckscher & Sons Co., Swedeland, Pa., Nov. 22, a stream of metal severely burned one of the workmen. The engine house was destroyed, and another workman was dangerously injured in the wreck. The loss is estimated at upwards of $100,000. As soon as repairs can be made No. 2 furnace will be operated by the engine of No. 1 furnace.

Fire caused $50,000 damage to the plant of the Koken Iron Works, St. Louis, Nov. 20. The company manufactures architectural and bridge iron.

New Construction:—

Chas. W. Potts, Spring and Fifteenth streets, Philadelphia, will build an addition to his foundry, 54 x 58 feet.

The American Ship Windlass Co., Providence, R. I., recently completed and put into operation a new brick foundry plant for the making of iron castings. The main building, 150 x 105 feet, is lighted with electricity and is equipped with foundry cranes and other modern devices.

The talk of the building of a steel plant in Canada by William Jessop & Sons, Sheffield, Eng., has been revived. Charles L. Bailey, Canadian manager for the English firm, started a few days ago for England to confer with members of the company in regard to the establishment of a plant in Canada. Toronto is said to be regarded a favorable location.

The Colean Mfg. Co., Peoria, Ill., has built a foundry, 50 x 120 feet, and a pattern shop 20 x 50 feet, both two stories high, with an expenditure of $25,000.

The Champion Blower & Forge Co., Lancaster, Pa., has purchased 3 acres, on which it contemplates the erection of a foundry, 60 x 300 feet. Plans are now being prepared.

The United States Coal & Coke Co., an interest of the United States Steel Corporation, has stopped the building of coke ovens at Tug River, W. Va. It was the intention to build 3,000, of which 1,200 have been completed.

The Grout Bros. Automobile Co., Orange, Mass., contemplates building a new foundry, and making other additions to the plant, but the plans have not been definitely formed. A new line of gasoline carriages will be added to the product of the plant.

Thee Holyoke Valve & Hydrant Co., Holyoke, Mass., has purchased the plant and business of the Kennedy & Sullivan Mfg. Co., and will increase its facilities for manufacturing brass fittings, valves, hydrants and steam fitters' supplies.

The Tallerday Steel Pipe & Tank Co., Waterloo, Ia., has erected a plant at Los Angeles, Cal. The main building is 50 x 510 feet, and the machinery is now being installed. The plant will be operated as a branch of the Tallerday Mfg. Co., and will be in charge of F. D. Tallerday. A large number of orders have been received, and it is expected that the erection of an addition will soon be necessary.

The Strow & Patchell Machine & Foundry Co., Charleston, W. Va., has had plans prepared for a new foundry. The company will do a general repair business, making a specialty of rebuilding locomotives. The officers are: D. H. Patchell, president; Moses W. Donnally, secretary; H. Morris, Jr., treasurer; H. S. Strow, general manager.

The Marinette Iron Works Mfg. Co. informs us that its new plant at Chicago Heights, Ill., heretofore mentioned, will have about three times the capacity of its present works. The plant will be modern in all appointments, and will consist of the following buildings: One machine shop 60 x 150 feet, one machine shop 100 x 250 feet, foundry 100 x 200 feet, blacksmith shop 40 x 60 feet, pattern shop 40 x 50 feet, pattern store house 40 x 50 feet, power house 40 x 60 feet, and several smaller buildings for storage purposes, etc. The entire plant is of brick and stone construction.

The Canadian Pacific railroad is making good progress in the construction of its new shops at Winnipeg, Manitoba. The buildings are as follows: Locomotive shop, 114,800 square feet; store and office building, 21,200 square feet; foundry, 10,800 square feet; freight car shops, 40,800 square feet; blacksmith shop, 21,600 square feet; power house, 10,000 square feet; dry kiln, 8,800 square feet; oil house, 3,200 square feet.

The Missouri Pacific railroad contemplates changing the location of its shops at Kansas City to a more convenient location on its line. Sedalia, Atchison, Independence and other cities are offering inducements to the company. Independence offers a site and $25,000 in cash.

M. E. Gartland, of Marion, Ind., president of the Gartland Gray Iron Works, of that city, is preparing to build a plant at Terre Haute, Ind. He will build a foundry, of which the main building will be 112 x 280 feet. The output will be castings of medium size, and about 125 men will be employed. Work on the building will be begun within a few weeks.

The Iowa Malleable Iron Co., Fairfield, Ia., has begun work on a $25,000 addition to its plant. When it is finished 75 men will be added to the payroll.

The structural iron work is now being placed in position at the large plant of the Baldt Steel Co., New Castle, Ind. The main buildings will be 530 x 70 feet and 334 x 70 feet respectively; flask shed, 334 x 40 feet; gas and power house, 80 x 40

feet; office, two stories, 60 x 40 feet. These buildings will cover an area of about 23 acres. About 300 men will be employed. A considerable part of the structural work of the Brylgon Steel Castings Co.'s plant at New Castle has been placed in position.

The Cape Fear Machine Works, Wilmington, Del., opened bids Nov. 21 for the construction of its new plant. The company was recently incorporated with a capital of $100,000.

The Baltimore Rolling Mill Co., a new concern having a plant at Canton, near Baltimore, Md., has begun operations in its 10-inch bar mill. The company was organized by Harry Wehr and J. C. Brown, formerly of Wilmington, Del. The puddling mill was cmpleted and started last February. The 18-inch bar mill started July 1 last. The plant is thoroughly equipped with modern machinery.

The Raymond Mfg. Co., of Middletown, Pa., is so busy in its foundry department that it will be compelled to build an addition, which will enable it to employ about 30 additional molders.

The Howard Iron Works, Buffalo, N. Y., will occupy their new foundry in a few days. The building is 92 x 180 feet, besides the cupola house. It will be operated by Niagara Falls power. A 10-ton traveling crane is being installed.

The plant of the Wilmington Malleable Iron Co., Wilmington Del., is nearing completion. The buildings cover about 46 acres, and are fireproof. There are six buildings in the group and they are as follows: Foundry, 221 x 460 feet; annealing rooms, 220 x 500 feet; power and boiler house, 50 x 75 feet; fire proof vaults for patterns, 50 x 70 feet; office building, two stories, 40 x 70 feet. It is expected that the plant will begin operations about Jan. 1.

The Waterloo Register Co. is planning to build a new foundry at Waterloo, Ind. The officers are: President, W. L. Carter, Des Moines, Ia.; manager, J. H. Riley, Waterloo, Ia.; secretary, R. H. Gatiss, Waterloo; and treasurer, F. J. Eighemy.

The sixth furnace of the Tennessee Coal, Iron & Railroad Co., Ensley, Ala, is now being built. The company has ordered blowing engines from the Mesta Mfg. Co. and they are being installed in place of the Weimer engines.

The Black-Clawson Co., Hamilton, O., is pushing work on its new foundry. The foundations are all in place. The buildings will be 55 x 280 feet.

The Perkins Co., Grand Rapids, Mich., will construct a new foundry 50 x 80 feet. The building will be of concrete.

The Pittsburg and Valley Districts:

Work was commenced this week on the erection of five additional open-hearth furnaces of 50 tons capacity each, at the Sharon plant of the Carnegie Steel Co., South Sharon, Pa. The plant now consists of twelve furnaces and upon the completion of these five the daily output of the plant will be increased to 1,700 tons.

The two furnaces of the Carnegie Steel Co., at its Ohio plant, Youngstown, O., which have been banked for some time. will resume operations about the end of the week. The third stack, which has undergone extensive repairs, and which has been out for some time, will be blown in about the same time.

The Greenville, Pa., plant of the Shelby Steel Tube Co. resumed operations last week after a shutdown of two months. J. J. Dunn, of Shelby, O., has been appointed superintendent to succeed the late F. Bubser. The plant of the Carnegie Steel Co. at this place has been shut down.

The Charlotte furnace, Scottdale, Pa., will shut down on Dec. 1 for extensive repairs.

The Duquesne plant of the Carnegie Steel Co., Duquesne, Pa., resumed operations in full this week. The plant, which was completely shut down for some time, resumed partial operations several weeks ago. All of the blast furnaces are now in operation, as well as the open-hearth and Bessemer steel plants. The finishing mills are also on in full.

Furnace No. 1 of the Clairton plant of the Clairton Steel Co., Clairton, Pa., resumed operations this week after being out for repairs for about one month.

The plant of the McKeesport Tin Plate Co., McKeesport, Pa., resumed operations this week.

Subscriptions for the $2,500,000 bond issue of the LaBelle Iron Works, Steubenville, O., were closed last Friday, and it is stated that about $1,500,000 of the bonds were taken by the present stockholders. The stockholders received the bonds at 90 and they carry 6 percent interest.

The plant of the Pittsburg Steel Co., Monessen, Pa., which has been idle for two weeks, resumed in full on Monday last.

The mill of Moorhead Bros. & Co., Sharpsburg, Pa., was shut down in all its departments last week.

The Monessen Coal & Coke Co., of Pittsburg, Pa., a subsidiary company of the Pittsburg Steel Co., was incorporated last week with $150,000 capital. The company owns about 250 acres of coal land two miles from Monessen and will supply the plant of the Pittsburg Coal Co. with coal.

The Bessemer plant of the Republic Iron & Steel Co., Youngstown, O., was shut down last week, and will probably remain idle the remainder of the month. The company's Atlantic furnace at New Castle, Pa., was also blown out.

The Mabel furnace of Perkins & Co., Ltd., Sharpsville, Pa., has been blown in, while the stack of the Brier Hill Iron & Coal Co., Youngstown, O., has been blown out and will be off for about six weeks.

General Industrial Notes:—

A 10 percent reduction in the wages of all the employes of the Andover Iron Co., Phillipsburg, N. J., was announced Nov. 18.

Two hundred and fifty workmen have arrived at Ft. Wayne, Ind., from Muskegon, Mich., to work in the plant of the American Rolling Mill Co., which has been moved from Muskegon to Terre Haute. It is expected that a part of the plant will be started within a day or two.

The Emma blast furnace of the American Steel & Wire Co., Cleveland, was closed for repairs Nov. 20. The stack will be relined and other repairs will be made. The furnace was blown in Nov. 22, 1896, and has been running continuously since that date, an unusually long time for a furnace to run without relining.

The Parkesburg Iron Works, established in 1868 at Parkesburg, Pa., have been closed down, owing to a lack of orders This is the first time the plant has been closed since it was founded.

President Andrews, of the Newport Rolling Mill, Newport, Ky., has notified the Amalgamated Association that the company will be compelled to reduce wages 20 percent or close the plant Dec. 15 for an indefinite time. The employes are awaiting action of the National Association before giving the company its answer.

The 20,000 tons of steel rails recently ordered to be rolled by the Pennsylvania Steel Co., for export, will be used for the Hamadie du Hedjaz railroad, which runs between Beirut on the Mediterranean coast of Turkish Asia Minor in the direction of Mecca, Arabia, the shrine of thousands of Mohammedans, who, instead of using camels, as for hundreds of years, will journey hereafter over a steel pathway made in America. The contract calls for the delivery of the rails at Beirut, for $22.88 a ton.

The Stanley G. Flagg & Co.'s foundry at Pottstown, Pa., will run five days a week, commencing this week. The workmen will be given Mondays off. This plan has been resorted to on account of the depression in business.

The Harrison Machine Works, of Belleville, Ill., have sold the property at Richland and West Third streets, and moved to a site on Richland creek and the Pennsylvania railroad.

The recently incorporated Miller & McIntyre Machine Mfg. Co., Rochester, N. Y., does not intend to build this year. It is now making automatic oilers for elevator cylinders, also an oiler for elevator slides, and other machines. Its business has been successfully started.

Three hundred men employed in making steel tank cars at the works of the Standard Oil Co., at Whiting, Ind., have been discharged. Curtailment of expenses is given as the cause.

The Baldwin Locomotive Works, Philadelphia, have a contract in hand for eight locomotives to be shipped to Corea, several for Japan, three for Brazil, two for Chili and ten for Cuba.

The recently incorporated National Twist Drill & Tool Co., Detroit, has installed a complete outfit of modern tools for the manufacture of Reamer's cutters and special tools, and will

commence building special machinery for manufacturing all kinds of twist drills. P. J. Hoenschied, general manager of the company, has had twenty years' experience in this line of manufacturing.

The Dean-Waterman Co., Greenfield, Ind., recently incorporated with a capital of $20,000, will succeed the Trees Mfg. Co. in the manufacture of the Hancock gas engines, from 1½ to 30 h. p. The engine is an extremely simply one and it has won an enviable place on the market.

The Otis Elevator Co. has secured a contract for furnishing 60 elevators for the Yerkes-Speyer syndicate for use in the London underground railway. The contract will amount to between $400,000 and $500,000.

After a shutdown of several months the Pacific Steel Co.'s plant at Irondale, Wash., will resume operations Jan. 1. Extensive repairs have been made.

The shutting down of the rolling mill of the American Steel & Wire Co., at Waukegan, Ill., has been followed by the shutting down of the fence department and galvanizing room. About 300 men have recently been laid off by the company.

Arrangements have nearly been completed for the transfer of the woodworking branch of the Ahrene & Ott manufacturing plant from Detroit to Louisville, Ky.

The Peninsula foundry of Newport News, Va., will be removed to Phœbus, that State. The foundry belongs to the Sayre Bros.

Luis Jackson, industrial commissioner of the Erie railroad, has published a map showing the facilities of the Erie for handling iron ore and coal in Northeastern Ohio, Northwestern Pennsylvania and Southeastern New York. He has prepared to furnish information as to suitable locations for industries along the line of the railroad.

St. Ignace furnace of the St. Ignace Furnace Co., St. Ignace, Mich., is being moved to Boyne City, Mich., by the Boyne City Charcoal Iron Co., according to the plans mentioned several months ago in these columns.

Judge Kohlsaat, of Chicago, has postponed the sale of the United States Locomotive Works, of Hammond, Ind., now in the hands of a receiver, until Dec. 10.

The John Wales Wire Co. plant at Auburn, near Providence R. I., has been leased for a long term by the Washburn Wire Co., of Phillipsdale, R. I., which concern has also purchased of the Wales Co. its entire raw and manufactured stock. The Washburn Co. will make steel billets in its open-hearth furnaces and will send them to Auburn to be rolled into rods, by this method obtaining a finishing plant for its New York mill at 118th street, formerly known as the R. H. Wolffs Co., Ltd. The Auburn plant was formerly owned by the Corliss Safe Works. When it was purchased by the Wales Wire Co. it was considerably enlarged. The business carried on was the manufacture of steel rods, nails and wire. There are enough contracts on hand to keep the plant running night and day for three months and presently the force will be increased to 100 hands. The officers of the John Wales Wire Co. were George R. Wales, president, and George W. Thurston, treasurer. Mr. Wales will be connected with the new management in its sales department. The officers of the Washburn Wire Co. are: Eugene F. Phillips, president; E. A. Smith, vice president; Joseph Rennick, treasurer, and C. R. Remington Jr., secretary and general manager.

The Springfield Foundry Co., Springfield, O., which manufactures machine tools and heavy castings, has closed its plant for an indefinite period owing to lack of orders. The Springfield Machine Tool Co., turning out the same products, is running but five days in the week on account of a lack of orders.

W. H. Van Sickle, superintendent of the Thos. H. Dallett Co., Philadelphia, notes that the outlook for business has never been more encouraging. A larger number of inquiries has been received from this country and abroad for portable electric and rope driven drills, pneumatic hammers, hand drills, stone surfacing machines, carving tools, plug drills, etc., than ever, and the company has booked many large orders. The buyers include the U. S. Metal & Wrecking Co., New York; Milne & Chalmers, Quincy, Mass.; Manning, Maxwell & Moore, New York; Robert Wood, Philadelphia; Henry A. Hibner Sons, Philadelphia; Allentown Boiler Works, Allentown, Pa.; Sangamon Coal Co., Springfield, Ill.; Winston & Locher Co., Clinton, Mass.; Cutter Wood & Stephens Co., Boston; Schuchardt & Schutte, Berlin, Germany; Niles-Bement-Pond Co., New York; Detrich & Harvey Co., Baltimore, Md.; Schuchardt & Schutte, Vienna, Austria; Hudson & Chester Granite Co., Chester, Mass.; Norcross Bros., Worcester, Mass.; Elkurtz & Son, Berwick, Pa.; Charles Sangster, Aberdeen, Scotland. These are for heavy tools, and in addition there is a large volume of business in small orders.

The Washburn Co., of Minneapolis, Minn., announces that it has made arrangements with the Pennsylvania Malleable Co., of Pittsburg, to manufacture and sell all its different types of couplers in the Central, Eastern and New England states. The Washburn Co. will continue the sale and manufacture of these couplers in other parts of the country.

The Tennessee Coal, Iron & Railroad Co. will not build a rod, wire and nail mill at Ensley, Ala., as has been reported.

The C., B. & Q. Railroad Co. has ordered a direct-connected engine from the Ball Engine Co., Erie, Pa.

It is reported that the Lorain Steel Co. has secured the contract for a complete electric trolley system at Wolverhampton, Eng.

The Retort Coke Oven Co., of Cleveland, whose by-product coke plant adjoining the Cleveland Furnace Co.'s stack is nearing completion, has increased its capital stock from $100,000 to $300,000.

The switch works of William Wharton Jr. & Co., at Jenkintown, Pa., after having run continuously night and day for two years, will discontinue the night force.

Three hundred employes of the New Haven Iron & Steel Co. are affected by an order issued Nov. 20 putting the plant in New Haven, Conn., on a short time schedule. The company manufactures building material, the demand for which has been seriously lessened by strikes.

The sales agent of the Dominion Iron & Steel Co., Sydney, N. S., has completed arrangements for a trial shipment of steel to Sweden. The company is looking forward to considerable market for its iron product in that country. Negotiations are also in progress for marketing a large quantity of coal in Sweden.

The North & Judd Iron Foundry, New Britain, Conn., has gone on a five-day week schedule.

Faithful employes of the McCormick Harvesting Machine Co., which sold out to the International Harvester Co., are to have a share in the profits of the new company. According to an official announcement made Nov. 19, employes who worked five years or more with the McCormick Co. will receive certificates of stock, par value $100, to the extent of 5 percent of the total salaries they have earned during their connection with the company. Should any recipient of these shares desire to convert his into cash he may do so between Jan. 1, 1907, and Jan. 1, 1909, payment of $100 for each share being guaranteed. It is stated that this action of the McCormick Co. is taken as a recognition of the co-operation which was uniformly rendered by the employes to the management.

An interesting and instructive souvenir was presented to the members of the New England Foundrymen's Association on the occasion of their recent visit to the new foundry and pattern departments of the B. F. Sturtevant Co., at Hyde Park, Mass. This has been republished as Bulletin 54, a 16-page pamphlet, describing and illustrating these departments and particularly their industrial equipments. The removal of the foundry and pattern departments is the first step towards the removal of the entire plant from Jamaica Plain, Mass., to the extensive new works at Hyde Park.

The Cleveland-Cliffs Iron Co. has purchased 59,174 acres of timbered land in Alger, Luce and Schoolcraft counties, Mich., from the Manistique Lumbering Co., at Detroit, the consideration being $165,281. The land is an unbroken plot lying between Grand Marais and Seney. The timber is spruce and hard wood. A part of it will be used to make charcoal for the Pioneer furnace at Marquette.

Officers of the National Malleable Casting Co. recently inspected the Sharon, Pa., plant, which, it is stated, will be enlarged for the manufacture of car couplers.